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THE METAPHYSICS OF NATURE

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THE METAPHYSICS OF NATURE

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INTRODUCTION

CHAPTER I

BELIEF AND KNOWLEDGE

§ 1. As to the nature and scope of Philosophy, two opinions are current. Some regard it as no more than the organisation of the Sciences: that further content is unattainable has been shown, they say, by experience of repeated failure and by reflection upon the nature of the case. According to others, there are prescientific beliefs that still have a necessary place in human life; and, even if no definite predications can be made outside the circle of the sciences, still the grounds of the sciences themselves must be examined, and their claims to be a comprehensive and sufficient explanation of the course of the world and of human experience must be vindicated. These opposing doctrines may conveniently be called the Positive and the Critical. To me it seems that, when reasonably stated, they are not opposed, but that both are necessary and complementary one to another.

Positive Philosophy, the attempt to unite the Sciences in one system, to expound their mutual relations and the harmony of their laws, is such a manifest demand of reason, that almost at the beginning of European speculation it was felt by Plato (*Rep.* B. VII.); at the beginning of modern thought, by Bacon; since Comte the idea has become popular, and the first problem of the Positive Philosophy, the Classification of the Sciences, is now a common exercise. The great body of the Positive Philosophy (not merely Comtian) is constituted by those sciences which give an account of the genesis and history of the world,—Astronomy, Geology,

Biology, Psychology, Sociology: the Analytic Sciences, treating of the modes of energy or activity which the genetic Sciences imply, are,—Mechanics, Physics, Chemistry, Physiology, Economics, etc.: the Formal Sciences, Logic and Mathematics, investigate the conditions of proving the relations and laws of phenomena in general, so far as proof is possible from accepted premises.

Critical Philosophy, which takes its name from Kant, and which I shall usually call Metaphysics, is the study of the validity and adequacy of knowledge and belief. Positive Philosophy, with its premises, is, therefore, part of the object of Metaphysics; but only a part: for Metaphysics has two branches, the Metaphysics of Nature and Science, and the Metaphysics of Ideals. The Ideals are expressed in Polity, Religion, Art, and Virtue; but these human Ideals and their metaphysical significance are beyond the scope of this volume. The Metaphysics of Nature, as Nature is presented to us in science and experience, is my subject; but since the regions of science are certainly greater than I can explore, I shall deal only with their most general principles, where they come nearest to philosophical interest, are least technical, and have now become an element of general culture; and it is a rule from which I never depart, not to attempt to solve *a priori* any problem, that can only be effectually treated by inductive methods. The criticism of knowledge and beliefs, then; and, of course, some extensions and interpretations of them, in order to give roundness and coherence to the whole; in fact, an essay toward the *Prima Philosophia.*

He who makes the Sciences of Nature or Ideals of Humanity the object of criticism, and investigates their validity and value, is not therefore sceptical about them. In some ages it is a fashionable distinction of the Minute Philosopher to doubt of the Ideals; at present, perhaps, to doubt of the Sciences; but it would be very insincere of me to claim merit upon either score. It is, indeed, foolish not to recognise that Natural Science, so recent a growth, must be immature, or not to admit that much even of what is considered to have been established may be infected with

error. It is also obvious that popular morals are little better than barbarous, and philosophic morals often narrow, timid and compromising; that popular religion is wavering, confused and superstitious, and that philosophical religion usually consists in offering one's personal persuasions as an apology for catholic dogma. But these things cannot hide the equally obvious truth that our daily life depends in every detail upon science, and for its stability and amelioration upon morals and religion.

There is indeed one conception characteristic of our age and sprung from its profoundest reflections, which may yet paralyse us with self-suspicion and fear. So long has been the process of the world, so long the period of human existence, so recent is the growth of science and moral enlightenment; so long is to be the future of mankind, so vast perhaps the expansion of civilisation and intelligence: what hope that we can yet have achieved or perfected anything? Must not all our culture appear shallow and vain in the comprehension of the world to come? May not our own descendants be the "superior beings" to "show a Newton as we show an ape"? But to let ourselves be inhibited by such forebodings is the surest way to prevent their realisation. The city founded on science which Plato and Bacon beheld in prophetic vision, can only be built by the continuous labour of human generations; of which ours is one. As the past is not abolished but re-embodied in ourselves, so shall it fare with us hereafter. And indeed better: for we are hardly rid of the illusion of astonishment or even laughter at the errors of ancient or even recent predecessors; but Time, with equal travail the mother of truth and error, will at last give birth to comprehensive criticism.

Still it is true and significant that philosophy, not yet 3000 years old, is a new thing in the world, and that 3000 years hence it will still be new: whether we consider the immense period of preparation for thought during the growth of organic consciousness; or the immense prospective period of reflection that remains, and will remain, for the human or super-human mind. Modesty, therefore, becomes us well, but

not despair. If many of our beliefs are erroneous; if little surprise is felt when what has passed for knowledge turns out to involve some mistake or oversight; if the sciences stand in need of perpetual revision and readjustment; yet comparison and criticism, rejection and confirmation, analysis and integration go hopefully forward; and in each age it is the part of Metaphysics to carry out the process methodically with reference to those doctrines and conceptions that at the time are assumed to be fundamental. Scientific discoveries, social changes and the indefinable growth of the public mind, have again and again thrown the older criticisms and systematisations out of use, like last year's crab-shells. To readjust the world's beliefs the philosopher was needed; he was a social organ for that purpose; without him the public mind must have remained either cramped or formless: and whatever mental blemishes he may have had, such as fancifulness, paralogy, megalomania,—all most incident to that sort of man, who is as much an imagination as an understanding, he brought the plasticity that is necessary to readjustment. And the task which giants of old accomplished single-handed must now be discharged by the regiment, each of us doing his share.

§ 2. As to the use of the terms Belief, Knowledge, Science, not much refinement is required, and I mean to avoid needless technicality. Every one thinks of science as the most definite, systematic, and best-ascertained kind of knowledge. The meaning of belief is less settled. It sometimes stands for the region of opinion or doctrine about which we are not quite confident; so that we recognise degrees of belief, or of subjective assent; whereas we should hesitate to say that we had knowledge or science of anything concerning which we felt doubtful, or saw any reasonable grounds for doubting. Sometimes, again, a fact or doctrine is called a belief when no logical reason can be given for it, though it may be held with the utmost force of conviction; whereas knowledge and science are supposed to be grounded upon evidence that can be explicitly stated and methodically adduced. But then, since the grounds of science are said to be axioms and facts of

sense-perception, for neither of which logical reasons can be given, the claim is laid that knowledge and science are themselves based upon belief, and are therefore even less certain than this from which they are derived. Or, again, if it be said that sense-perceptions and the intuition of axioms are direct cognitions, and that this is more akin to science than to belief, as the terms are commonly used; it may be replied that, at any rate, the greater part of any man's science depends upon memory, or upon the testimony of others, and that this is certainly called belief. Besides, there is no impropriety in saying that a man 'believes' the fifth proposition of Euclid, though he may just have demonstrated it; and even the wildest beliefs of savages are based upon some sort of evidence and elaborated by some sort of reasoning.

For my part, I shall use Belief as the most comprehensive term, including Knowledge, which again includes Science. For although a science may have some appearance of being an independent structure, it is better to regard it as an outgrowth of beliefs, having the original nature in every part, without which it would have no hold upon us or serious interest. Belief is the subjective acceptance of Reality: whatever we believe in is regarded as real, or as grounded in, or corresponding with, reality: and whatever we take to be real is thereby an object of belief, and determines our conduct accordingly. Our discussions will be concerned hereafter with the validity of Belief, Knowledge, or Science; that is, only so far as it is regarded as implying Reality. Metaphysics is not like formal Logic, which may deal with 'X is Y,' no matter what X and Y stand for; and it cannot, like formal Logic, deal with judgments or propositions without reference to the attitude or process of believing or knowing them. To give a full account of belief as merely subjective, and of all the processes of perception and inference, belongs, indeed, especially to Psychology, and the most comprehensive account of belief is given by James Sully in *The Human Mind* (chap. xii.); but Metaphysics, as best it can, makes use of all the sciences. We must therefore consider these things so far as they throw light upon metaphysical inquiries: though our object is Belief for the

sake of Reality, Reality cannot be isolated from the subjective processes through which it arises for each of us and stands there for us all.

§ 3. Psychologists seem not to have been able to carry their investigation of the nature of belief much beyond the point that was reached by Hume (*Treatise*, P. II., Sects. v. to x.; *Inquiry*, Sect. v., P. 2). They have drawn more attention to the importance of our emotions and activities in establishing belief, but he did not overlook these factors. Now Hume found that belief differs from 'conception' or 'fiction,' not in its content, but only in the manner of conception, or (more precisely) in a certain "feeling or sentiment" it has in the mind: a feeling that cannot be defined any more than cold or anger, that is, than any state of mind that Locke would have called a "simple idea"; because, of course, such states cannot be analysed: they must be severally experienced. This result gives him some embarrassment: "For my part I must own that I find a considerable difficulty in the case; and that even when I think I understand the matter thoroughly, I am at a loss for terms to express my meaning. . . . And this different feeling I endeavour to explain by calling it a superior force, or vivacity, or solidity, or firmness, or steadiness. . . . And in Philosophy we can go no further than assert, that it is something *felt* by the mind, which distinguishes the ideas of the judgment from the fictions of the imagination. It gives them more force and influence; it makes them appear of greater importance, it fixes them in the mind; and renders them the governing principles of all our actions."

Hume's embarrassment has generally been shared by his readers: partly, perhaps, because 'feeling' is the name of so many experiences that are fugitive and insignificant; chiefly because it is paradoxical to refer the Reality of the universe ultimately to *my* feeling or sentiment. But the paradox results from identifying the metaphysical with the psychological point of view, the position of self-consciousness, which involves metaphysical 'solipsism.' The difficulty of accepting Hume's doctrine disappears if Reality be based upon what we *all* feel with such 'force,' 'firmness,' 'steadiness': for what

more can we say? Modern Scepticism has descended from Descartes not because he insisted upon proving all things, but because he found nothing to hold fast by except self-consciousness; for the Hegelian interpretation of this position, as implying universality, was far from Descartes's mind. The existence of other people than ourselves may indeed be supported by arguments; we may say that (*a*) they are like ourselves externally, therefore internally; (*b*) they proceed from similar generative causes, therefore are similar effects; (*c*) they answer when we consult them, and thus verify the hypothesis of their being conscious. Thus a justification may be obtained for recognising their assent or dissent; but such arguments cannot be said to carry conviction, since they add nothing to the conviction we already have; and to urge them seems a disparagement of the instinctive belief that existed in full force before they were thought of.

But whatever difficulty Hume may profess to find in the conclusion that belief is a kind of feeling, he is, of course, pleased with the literary effect of his paradox; and he goes on to inquire into the causes of belief. He observes first that belief always attends the memory and the senses. This is universally admitted; Kant identifies Reality with sensuous data. Among the senses some are more convincing than others; the prerogative of sight is witnessed by the proverb, "Seeing is believing," and the still greater efficacy of active touch, by the test of St. Thomas. That is especially real which we act upon and which limits our activity by acting or reacting upon us.

But Hume's next remark takes us deeper; an impression of the senses communicates its vivacity and force to all ideas related to it. Hence memory is distinguished from imagination by its greater vivacity and also by the fixity in the order of its ideas, derived from the order of the original impressions. Further, the vigour and vivacity of mental processes, and therefore of belief, is favoured by attention, by the associative principles of resemblance and contiguity, and, more especially, by causation and by repetition or custom. Even an idea of which we have forgotten the correspondent impression may

itself become the ground of belief and inference; because whatever firmness or vivacity it has it must be able to bestow on whatever is related to it. "Of these impressions or ideas of the memory we form a kind of system, comprehending whatever we remember to have been present, either to our internal perception or senses; and every particular of that system, joined to the present impressions, we are pleased to call a *reality*. But the mind stops not here. For finding that with this system of perceptions, there is another connected by custom, or if you will, by the relation of cause and effect, it proceeds to the consideration of their ideas; and as it feels that it is in a manner necessarily determined to view these particular ideas, and that the custom or relation, by which it is determined, admits not of the least change, it forms them into a new system, which it likewise dignifies with the title of *realities*. The first of these systems is the object of the memory and the senses, the second of the judgment. 'Tis this latter principle which peoples the world, and brings us acquainted with such existences as, by their removal in time and place, lie beyond the reach of the senses and memory." Hence, although the passions and the excitement of poetry and oratory, by increasing the force and vivacity of ideas, influence our beliefs, yet "by reflection and general rules, the understanding corrects the appearances of the senses," and determines the judgment, "even contrary to present observation and experience."

Thus in reviewing the causes of Belief, Hume, starting from sensation as its origin, has effected a transition to science as still more coercive. His explanation of this is that the system of general rules rests upon customary experience, and that the mass of this overcomes the strength of any particular impression that seems to oppose it. He has not completely guarded his position: a general rule cannot, of course, overcome a single impression *per se*; if I see 'red,' I see 'red': but a rule may determine the significance of an impression; if I take it for blood, the rule may assure me it is claret, or even that it has a subjective origin with no external correspondence. One might also complain that only by a strained

interpretation can our belief in systematic science be said to be based upon the custom of experience: so much analysis intervenes. Yet it is essentially true that, first, the reduction of general laws under others still more general, and these again under others, as in the systematisation of science, confirms one by another through identification of the relations involved, in a manner analogous to the confirmation by repetition of particular passages of experience, such as the striking of a flint and the outburst of fire; for every physical law, as a relation of cause and effect, is a repetition of every other: and that, secondly, as a sensation or idea "transports the mind to such ideas as are related to it," and "likewise communicates to them a share of its force and vivacity," all the elements of experience embodied in a general rule must strengthen and enliven one another, and so must all the rules related together in any system. It is easy, therefore, to understand that in such a system the greatest intensity and stability of belief is found; especially in those who have not merely learnt to rehearse its formulæ but in whom it has been renewed by experience and labour; for a hearsay system depends upon who, or how many, are heard to say it, and may not prevail over other prejudices.

Exception may be taken to another expression of Hume's: he says that "we form" the system of memory, and that the mind "forms" the system of understanding; but this seems to me true only in the sense that an acorn forms an oak. It is manifest that the system of memory grows, and that in most men a very small part of it is designedly formed; and the same is true of the system of understanding. Hume's expression too strongly suggests an artificiality in our systems of belief. On the other hand, he observes in the *Inquiry* that belief "depends not on the will, nor can be commanded at pleasure"; that is, belief depends not on an immediate act of will. The Philosopher of "Common Sense" (*Intellectual Powers*, vi. 4) agrees with him: "It is not in our power to judge as we will. The judgment is carried along necessarily by the evidence, real or seeming, which appears to us at the time." Plainly, belief upon evidence, far from being

volitional, is a kind of acquiescence. But here, again, some qualification is needed; for if, as Hume says, attention and the passions help to determine belief, it follows that, without design, the cumulative effect of volition may be very great; and, accordingly, it is a common remark that people believe as they list; and Pasteur had reason to say that "the greatest disorder of the mind is to allow the will to direct belief." The passions determine belief by communicating a "greater force, vivacity, solidity," to ideas; that the sthenic emotions have such influence is easily understood; but so have the asthenic, by the infusion of fear which (as Mosso shows) is pathologic and exerts a fascination—whence the power of superstitions. And voluntary action itself strengthens belief without any direct 'will to believe'; for having an end in view, and being busy with means toward it, we are concerned with relations of causation, which (as Hume might say) afford an easy transition of thought; and, moreover, the reaction of our efforts irradiates from the kinæsthesis the whole region of correlated ideas.

§ 4. There remains an important cause of Belief of which Hume says remarkably little: the influence of social life in the various forms of education, tradition, authority, common sense, confirming alike our sciences and our superstitions. It seems to have been characteristic of the Sophists to dwell upon this topic, insisting that what was taken for truth or justice existed only by institution or convention, not by nature; whereas Plato and his followers have maintained that in nature or the reason of nature, the truth of everything is grounded: Aristotle, for example, argues that both absolute justice and slavery are by nature. For me this dispute turns upon an exaggerated distinction between nature and society; since institutions and conventions are as natural as trees in the forest; where, also, poisonous weeds are found. But social influence introduces new causes of belief; for Society has interests besides those of which its members are aware; and from social relations grow many distinctively human sentiments, such as loyalty, honour, justice; since it is necessary that men should co-operate: and these feelings determine our way of thinking. The great organ of social influence is

language, whose terms derive their meaning from experience; and propositions, bringing these terms together in thought, as experience brings facts or events together, produce, where there is no overwhelming conflict, some degree of belief. For what else is the use of language? But see the consequences. As soon as we can talk, the right of private judgment is encroached upon by irresistible power, and every artifice is adopted to bury the nascent understanding under a load of prejudice. What might not happen could there ever be an *intellectus sibi permissus*! Socrates, perhaps, by fighting his way back, got nearest to it; and no such force to make others think has ever appeared in the world. But family, school, church, and State instruct the boy and the man what to think and what to do. Inheriting a nature fit for such a life, his instincts of imitation, honour, sympathy, reverence, and the rest, all co-operate in delivering him over to the great tutor or arch-sophist (however you regard it), Society, till both in thought and manners—

> Custom lies upon him with a weight
> Heavy as frost and deep almost as life.

The habit of believing assertions, become almost instinctive, gives opportunity to liars and other imaginative persons. Falsehood and romance, imperfectly differentiated, flourish amongst children and savages; and this is quite natural, for deceit is common in organic Nature. Hence, if we may assume (on the principle of natural selection) that in a successful tribe or nation most of the prevalent beliefs are, or have been, useful, still we cannot infer without special inquiry that any particular belief is true.

§ 5. Philosophy, then, coming late in human life, meets at the outset with a great difficulty: how to begin the discrimination of truth and error, what to accept, what to reject? Hume's remark about Religion at the beginning of his *Natural History* is true of every belief: there are two questions to be considered—"its foundation in reason," and "its origin in human nature." The mass of beliefs, ingrained in childhood and youth, abides with us; preceding the exercise, it is

necessarily amongst the foundations of reason. Sometimes the philosopher has affected to disregard this situation, to base all his structure of thoughts or words upon one first principle, or even to proceed without assuming anything at all. Whereas, in fact, even the greatest philosophers rely on the history of culture and the attainments of their own age, and in the elaboration of their doctrines at last depart at but few points from common sense; are sometimes anxious to show that it is the other philosophers who are at issue with "the plain man"; or if they venture to maintain here and there a monstrous paradox or two, they compound for it, and excuse their treason to King Mob, by deducing thence through unexpected links of inference all the most popular conclusions. Who does not see that the pretended conclusions are the real premises? The Sceptics abolish all knowledge, and then restore it under the name of probability. On the other hand, though something must be assumed, we cannot begin by accepting the whole accumulated traditions of our race. But, fortunately, wherever Philosophy becomes possible distinctions have already been recognised, by those who can be interested in Philosophy, between various groups of beliefs as more or less trustworthy. Not only belief but criticism is antecedent to Philosophy. Why not take frank advantage of this, and assume provisionally all that is accepted by well-informed and sensible people; in fact, as much as a candid reader is likely to grant?

Akin to the illusory purism of deductive method, evading the traditionary foundations of knowledge, is the egotism of some Philosophers as against their predecessors and rivals, their claim to originality. Each man, indeed, feels bound to treat all the problems that have formerly been dealt with, and he recognises a closer relationship to some of the dead than to others, and sometimes approves of an attitude of mind or even adopts a formula; but, on the whole, he undertakes to create anew the intellectual world by the intervention of his own word; if others had the right point of view, they failed to see the landscape in its true perspective; if they had a glimpse of a sound principle, they had no steady vision of it and could not draw the necessary inferences. As for those with whom

the philosopher feels little sympathy but rather antipathy, his criticisms of them are often so unintelligent that he may be suspected of having taken little pains really to understand what they were trying to say. In short, hitherto, by his account of it, mankind had sat in the cave, gazing at shadows, and he first had managed to turn round, to climb up to the sunlight, and to behold the world of things in their truth and substance. In consequence of such egomania, a philosopher's view, though often ingenious or even sublime, is manifestly one-sided and partial; it is just *his* view; we learn from his works only what the infinite world seemed like as reflected in his little head.

Eclecticism, meanwhile, has been a term of reproach; it means the unreasoned adoption from others of incoherent principles by mere subjective preference. And it must be acknowledged that those who have been especially called Eclectics have been second-rate thinkers; a good deal of self-confidence is natural to the great man. But the possibilities of really independent performance are greatly exaggerated. The limits of individuality are narrow; no one man is equal to any great task. In such a personal matter as epic and dramatic poetry, the greatest geniuses never invent their own fables, but are content to give a new form to that upon which the human mind has long brooded. Similarly in science and mechanical invention, each discoverer builds upon the labours of others. And so, in fact, it must be in Philosophy; the systems that make such a figure in history age after age, are patchworks; the critical historian has no difficulty in tracing the materials to former owners, and in many cases he might trace them to folk-lore. Is it not better to acknowledge all this; to recognise that in experience, tradition, speculation, the foundations of Philosophy have already been laid; that other foundations can no man lay; that the work belongs to the ages, not merely to us, and that as it was well begun long before we put hand to it, so after we have done our best and gone away it must be carried on by countless generations?

§ 6. The causes of Belief manifestly give rise to both truth and error. In simple, barbarous tribes the discrepancies of popular tenets are slightly felt. With the growth of experience

and the keeping of records, with the change of social interests and establishment of orderly and definite conditions of life, the contradictions of fact with fancy and of fancies with one another are gradually forced upon the attention of the more reflective minds. Hence, as we said, before the rise of Philosophy some beliefs have become less trusted than others. Belief admits of all degrees of intensity, from the subjective feeling of "necessity," through degrees of probability, to doubt and suspension of judgment; and, again, through degrees of improbability, to disbelief. Subjective probability and improbability differ from belief and disbelief, not merely in the intensity of their feeling; as states of mind they are more complex and a later attainment; and suspension of judgment is the most complex and the latest attainment of all. Bain's 'primitive credulity' rules the savage life. Considerable growth in the organisation of thought is requisite before those comparisons are made by which it is explicitly recognised that one belief excludes another; which, therefore, must be rejected and disbelieved; and prior to such growth, beliefs persist in spite of many and glaring contradictions of fact. A sense of improbability depends upon a more refined appreciation of conflict amongst the causes of belief and therefore amongst expectations. Suspension of judgment implies that incompatible beliefs are felt to be equally balanced in a mind susceptible to their influence at the same time, that is, within the psychological present; therefore, in a highly co-ordinated mind. For an imperfectly co-ordinated mind, it is well known, may be possessed at different times with incompatible beliefs, and never compare them at one and the same time; may be quite unaware of their incompatibility, and perhaps incapable of comparing them. We may all of us be more or less in this condition, and the ideal Philosopher, entirely free from confusion and latent self-contradiction, may not be born for some thousands of years to come.

The causes of Belief are always, in the first place, regarded as reasons for believing; whatever, at any stage of culture, determines the judgment, may be adduced as evidence. "I was told so"; "It is a story honourable to my tribe"; "I

saw it in a dream": in certain conditions of society these are reasons. But when Hobbes observes, that the last of them is equivalent to "I dreamt that I saw it," every one smiles, and recognises that the value of evidence changes with the mind of man, and that to assign the cause of one's own belief is not to give a catholic reason for assenting to it. But what security can our own age have, or any age, that its 'reasons' will not excite the smiles of posterity? Will it not be always true that, in giving reasons for a belief, mankind must point at last to some of its causes? Is it possible in the case of any belief, to draw clearly Hume's distinction between "its foundation in reason" and "its origin in human nature"?

Argumentative discussions and scientific investigations having drawn attention to the methods of arranging and formulating evidence, or of reasoning, which are especially embodied in Logic and Mathematics; the effectiveness of this organon within certain limits, and the exultation of commanding it, have led men to identify it with Reason itself, and to invest it with all the glory of the differentia of the paragon of animals. It has been supposed to carry conviction by means altogether different from those that excite vulgar credulity; and in comparison with it every other kind of evidence has been disparaged, and experience itself regarded as irrational and inconclusive. Inasmuch as these systems of reason, Logic and Mathematics, must have some basis, this, we are told, is intuitive reason, which gives the axioms or necessary grounds; so that the formal systems are reason throughout; intuitive and discursive reason are ground and superstructure. If any account of intuitive reason be asked for, it is *a priori*, 'innate,' 'heaven-implanted': all which phrases amount to a refusal to give any explanation at all. And in this faith many a thin enthusiast will still live and die. The theory of evolution, however, to any one who accepts it, is, I suppose, incompatible with any but an experiential origin of intuitions, as instinctive modes of cognition developed in the human mind and generalised by language. An intuitive axiom is a general judgment concerning ultimate unconditional truth: its generality distinguishes it from a perception of fact, and its uncon-

ditionality from discursive reason, which depends on premises. It was in attempting, under some misapprehension of the facts, to explain the intuition of causation that Hume attributed it to "custom"; and for this he is always charged with scepticism concerning reason; whereas he was only giving the best account he could of the growth of reason as to this concept: "Custom" is intuitive reason in the making. Intuition, then, is at once a resultant and an element of experience, and as such it is a cause of belief. But, further, not only is the basis of Logic and Mathematics to be derived from experience, but unless their forms are filled with the content of experience, they are absolutely useless not only in practice but in the discovery of truth, and can never make us believe anything. All reason, therefore, rests upon, and is merely a mode of formulating, material that is not technically rational, namely, experience.

It must be acknowledged that such a way of considering beliefs, as wholly determined by experience, suggests a mechanical interpretation of thought, as if Truth were the survival of a conflict in the mind, as the equilibration of any system depends on the cancellation of disturbing forces. Moreover, so far as experiences can be expressed in propositions they may be exhibited as reasons, but in extensive regions of experience this may be impossible; for much of our experience is subconscious, and our subconscious life powerfully influences judgment and belief, but cannot be read into the forms of Logic. If then, in fact, such experience determines beliefs that are inexpugnable and a necessary complement to those in which formal reason plays its greatest part, our judgment seems to be given over to a power beyond our control and beyond the reach of analysis.

But the consideration of Belief in relation to reason and experience, draws us from the subjective to the objective side of knowledge. An attempt to discriminate the characters of truth and error; to collect and examine the grounds upon which philosophers have endeavoured to justify their convictions or their scruples; and to inquire whether, or how far, Belief is, or may become, co-extensive with Reason, will occupy the following pages.

CHAPTER II

REALITY AND TRUTH

§ 1. Opposite me, at a distance of about 500 yards, a hill rises steeply to a height of about 1000 feet. At its foot lies a narrow meadow surrounded by dark green woods of oak, chestnut and fir. Above the wood runs a brighter border of ferns, then heather, and at the top grey crags. In the blue overarching sky a few white or grey clouds drift slowly along. From the valley at the foot of the hill is heard the rushing of a mountain stream, hidden by trees, and from this side of it a meadow and lawn slope up to my window. Cattle browse across the meadows; swallows skim by in the air, and a light wind rustles through the woodland.

This is Empirical Reality, matter of fact, the scene of the activity and interest of life, the beauty of the world, which can never be "explained away," and for which no theory can ever be substituted. Why not be content with this, instead of making a theory about it?

Still, this being a working hour, terms of the Schools begin to jangle in my ears and gurgle in my throat. I observe grimly that the scene before me is matter in space, a continuum of points of resistance and intervals of free movement; that I am necessarily impressed with its permanence as a whole, in spite of changes among its parts; and with its independence of myself, in the sense that others will see it when I go away, and that if I come back next year it will seem much the same. I see that all objects in the landscape have characteristic properties; that only oak, and fir, and fern, and heath, and rock look just like that; that only

swallows and one or two other birds with similar wings have just that casting, sweeping flight; that only mountain streams make just that everlasting noise. And as to all this no serious doubt is possible, and if any one suggests a doubt there is no use in arguing about it. A belief so primitive as generally to be inarticulate, no other can compare with it in "force, solidity, firmness, or steadiness."

This Empirical Reality is equivalent to human sense-perception. It involves much more than sensation, more than the sense-perception of an animal such as the cow yonder; nay, to one man sense-perception has far more significance than to another. As mind develops all its functions develop, and sense-perception comes to include more and more the elements which, considered abstractly, are ascribed to thought. In fact no clear separation of mental functions is possible, but only a distinction of view for special purposes. Thought is immanent in perception and perception is implied in all thought. We may say that most characteristic of thought are the scientific processes of classification and explanation; and these are plainly involved in the present perception: for I classify in saying that I see oaks, chestnuts and fir trees; and I explain in saying that I hear the noise of a river that cannot be seen.

However, by thought these processes are carried much further than by perception. Thought, dealing with concrete things, has chiefly three investigations, what things are, how they came to be so, and what they do; or their nature, their causes, and their effects. Not content with seeing that certain trees are oak, chestnut and fir, according to popular recognition, we desire to know exactly the structure of each of them and how they differ from one another. We find that the oak and chestnut are much more alike than either of them is to the fir. We also learn that these trees and all other plants consist of cells, and that this is also true of cows and swallows and all other animals; that the cells again consist of chemical molecules, and that this intimate structure is common to them with the rocks at the top of the hill. This, then, it may be said, is what things are.

As to how things came to be such as we now perceive them, the conclusions are at present less definite; but a botanist or zoologist would give some account, or suggestions toward an account, of how oaks or cows arose; and a geologist would explain that the rocks at the top of the hill (which I believe to be weathered slate) were long ago deposited as fine mud at the bottom of the ocean; then covered with other deposits, and during disturbances of the earth's crust subjected to enormous lateral pressure at a great depth and probably at high temperature; whence resulted their characteristic cleavage and the tilting and fracture of their stratification. Beyond the deposition of the mud lies a region of surmise concerning still earlier rocks, and farther back still the supposed cooling of the planet, after its origin in the condensation of a cloud of molecules.

What things do depends upon what they are. Now they are regarded as special arrangements of molecules; so that what they do depends upon the nature and grouping of these molecules according as they constitute inorganic or organic bodies, plants or animals, oaks or cows. Amongst their activities, it is explained, are those that enable us to see them, hear, smell, taste them, feel them to be warm or cold; for these elements of experience are scientifically regarded as merely our sensations, not belonging to the Reality as such. The oscillations of the molecules of a body, for example, by setting in motion the ether, stimulate the nerves of our eyes or skin, and thereby the sense of light or warmth arises. Since, then, as every inquiry brings us to a world of molecules and ether, and of their movements, it is very common to speak of these as real in an eminent degree, to the disparagement of the manifold of Empirical Reality, as if this were comparatively unreal. An obvious impropriety: to avoid which I shall call the world, as conceived by scientific thought, Physical Reality.

Some metaphysicians reduce Reality to much narrower bounds. They argue that the only absolute existence in the world we perceive is a Substance or substratum, of which Physical and Empirical Realities are merely the manifestation

in our consciousness. The properties of the Physical World, resistance, extension, and motion, they call primary qualities of this substance; and the further properties of the Empirical World, colour, sound, etc., they call secondary qualities. There are various ways of formulating this doctrine; but they all agree in degrading the world of perception and scientific analysis to the position of a phenomenon, having only a conditional reality and lying, in fact, as Plato says, somewhere between reality and nothingness. We may call the substance which all appearances or phenomena are said to depend on, or inhere in, but which is never directly known, Transcendent Reality, or Being.

As to the nature of this substance, however, whilst the commoner practice is (or has been) to call it Matter, others maintain that it is essentially Thought. The activity of the Divine Mind, they say, or the self-existent Ideas of things (for here again there are various opinions) must be regarded as the ultimate ground of phenomenal existence. And the ultimate ground, thus conceived, it may be convenient to call Noumenal Reality.

Reality is, however, not exhausted by the object of perception and its supposed conditions. Looking out upon the landscape, I am aware of my own delight and interest in it, an expanding curiosity, activity, and exhilaration; listening to the rush of the river, I cannot help wishing that the trees on this side of the valley were a little thinner, that I might also see the shimmer of the waters; if whilst watching the swallows it occurs to me that they are catching many insects, there may cross my mind some disturbing considerations of the raven of nature, mitigated by further considerations of the annoyance that would be caused by too many insects; and so on. Now these feelings, wishes, inferences also belong to Empirical Reality; it is the reality of what Locke calls 'Reflection,' and may be termed 'subjective' to distinguish it from the objective Reality of Perception.

There is nothing in the subjective region corresponding with Physical Reality. Something approaching the character of a primary quality of mind may be found in the nisus of

attention; but this cannot be regarded both as a condition of other modes of consciousness and at the same time independent of them, as molecules are in relation to visual and auditory sensations.

A Transcendent Reality of Reflection is generally recognised under the names of Mental Substance, Ego, Self or Spirit; or, considering it as informing and animating the body, and (by most) as capable of subsisting independently, it is called the Soul. Concerning the nature of this mental substance, however, and its relations to the thoughts and feelings which are its properties, modes, or activities, there is, as in the corresponding case of material substance, much difference of opinion; and, according to Materialism, the substance of mind is the body.

Finally, the Self, or Soul, or particular human (or animal) consciousness is sometimes treated as an emanation or process or phase of the Universal or Divine Consciousness; and, according to this doctrine, the worlds of perception and reflection have the same fundamental Noumenal Reality.

§ 2. The notions of Reality and Truth are sometimes identified, as when it is said that the truth of the world is the Good: meaning that Good is the ultimate Reality. But it seems better to say that Reality is that of which Truth is a more or less adequate representation; or that Truth is the correspondence of cognition with Reality. It may be complained that this is to give a secondary place and an inferior dignity to truth; and further that, thus understood, truth cannot be ascribed at all to the Divine Consciousness, which is Reality itself. Such difficulties, arising from traditionary associations of words, are amongst the reasons why Metaphysics must be written. It seems to me that human consciousness likewise is Reality itself. Whether the Universal Consciousness can be called 'true,' matters little: I despair of doing honour to the Absolute by any accumulation of predicates. But if the word truth implies the possibility of error, it cannot be an attribute of the Divine Mind; and it seems an advantage of the above definition that it regards truth as only appertaining to particular consciousness, and restrains the vagaries of

speculation by the consideration that what we seek is *τὸ ἀνθρώπινον ἀληθές*.

Truth, then, must be considered under each of the recognised modes of cognition and representation, Percept, Image, Concept, Judgment; and in relation to the various modes of conceiving Reality.

The Percept, indeed, may seem identical with Empirical Reality; and so it may be as far as it goes; but it is never adequate, as we may see by looking closer at an oak tree, by tearing off the bark, making sections of the wood, examining it under a microscope. The percept, again, may contain representations that accurate inspection will not verify; that is, it may be illusory. Besides, not every one looking at yonder hill can discriminate all the shades of its manifold coloration; some are blind, or colour-blind in various degrees; there are limits of discrimination to the most delicate sense: nor, listening to the concert of nature, can every one hear the various tones of stream, thrush, grasshopper; nor when night falls, the cry of bats in altissimo, the hooting of owls and still the rushing of the stream; some are deaf, some hear various noises but no music. There are, therefore, three ways in which perception may come short of the truth of Empirical Reality: it may be abnormal, or illusory, or inadequate.

The content of any percept is direct Empirical Reality for the perceiving Subject; but so far as it does not agree with the perception of other Subjects in the same circumstances, it is abnormal or illusory. So far as merely inadequate, it is symbolic or representative of a whole; and it is true so far as it signifies further possible percepts discoverable, immediately or conceptually, by exploration.

Perception may be especially inadequate in respect of the relations and reciprocal influence of things. Where a thing is, seems to perception a needless question, but it is very difficult to answer; how far things are distant from one another may be perceived more or less accurately, but only within narrow limits. That a certain tree flourishes in one situation and not in another; that one tree shadows barren ground, whilst another allows the growth of grass or under-

wood: so much we may, perhaps, be said to perceive, but not the processes that have these results. We cannot perceive how vegetable life depends upon soil and sunshine; how animal life depends upon vegetable, and vegetable upon animal; the processes and conditions of dependence are secret and obscure. We perceive the voice of the river and the light of the sun, but not the means by which they reach us. Thus, when we try to trace the connections of things and events, the inadequacy of direct perception drives us from Empirical to Physical Reality.

Now the elements of Physical Reality, atoms and ether, cannot be directly perceived at all, cannot be sensibly distinguished from space, being too refined to offer any sensible resistance to our movements. Atoms massed together, indeed, become directly perceptible by manipulation; but this is a very coarse means of perception, since millions of atoms may be added to, or subtracted from, a given mass without our being at all aware of it. The size and qualities of atoms, the nature of the ether and the movements of these things are altogether conceptual. Conceptual truth, which will presently be considered, is entirely representative; it is not only symbolic of something else, but it is also no part of that which it symbolises; for the name or definition of oxygen is no part of the gas, as the colour of a rose is part of its Empirical Reality.

As to the truth of percepts in relation to Transcendent Reality, Substance was supposed by Locke to resemble Empirical Reality (ideas of sensation) in its primary qualities, but no further. Spencer tries to show that, whilst there is no direct resemblance, there must be a correspondence of relations between the world as perceived and the Unknowable Force; others have even denied that a transcendent Substance exists at all. Noumenal Reality presents similar difficulties: Plato treats the truth of the phenomena (percepts) sometimes as a participation in, sometimes as an imitation of, Ideas; and he shows that great perplexity arises in either course. In fact, we are here confronted with a great traditionary question of Metaphysics. (See Chapter VIII.)

§ 3. Less metaphysical interest attaches to the truth of images: I mean the phantasms or traces that perceptions leave in the mind and which fill our study of memory or imagination. On the whole, it must be considered to follow the truth of perception itself; that is, images may be normal or abnormal, or illusory, adequate or inadequate; and, in the latter case, either as to objects and events, or to their order and relations. The older psychologists greatly exaggerated the extent to which, in ordinary minds, images are copies of their original percepts. A few people have very vivid and complete mental pictures, most people much less perfect, some hardly any that can be said to resemble objects or occurrences: similarly with phantasms of hearing and of active touch; of other sense-perceptions still less. In general, as perception is inadequate, it is symbolic; and imagery is far more so, as we see in the swift and synoptic career of memory; but this is a matter of Psychology rather than of Metaphysics. Mental imagery is a great source of illusions and primitive superstitions; but with the development of reason imagery and the vague ideas it supports are superseded by concepts, and become important chiefly as subsidiary to the conceptual system.

If you mention an oak to any Englishman who has ever lived in the country, it may call up some image of a tree growing in a wood or in a meadow; it will at least suggest certain characteristics of such a tree in verbal schemes if you ask him to describe it; as that it bears leaves of a certain shape and colour, branches almost horizontal with sharp lateral twists, has acorns for fruit, sometimes carries oak-apples, makes a hard durable wood of a certain structure. This is his idea of an oak. A botanist makes this idea more definite and detailed, explains that oak-apples are not a natural product, assigns a particular oak to its genus and species, showing how it differs from other allied kinds. This is the concept of an oak. The botanist may go on to explain how the oak grows, feeding upon the soil and air; how its leaves inhale carbon dioxide and exhale oxygen, for the nature of which gases he refers you to the chemist, and the chemist is ready with

definitions or concepts of them and their laws. Thus, again, the conceptual system is created to make good the shortcomings of perception and imagination, Physical Reality to complete Empirical Reality. The creation of this conceptual system is carried out by a combination of observation, hypothesis, deduction and induction, for which I refer to books on Logic and Methodology. The physical method proceeds from percepts to concepts concerning their nature and connection, and comes back to percepts again: the return to percepts being the verification of the conceptual construction. At every stage the conceptual process must conform to the analogy of perception, and is checked by perceptual conditions. By conforming to the analogy of perception, I mean that the things conceived must be endowed only with such qualities and movements as bear some resemblance to the qualities and movements of things perceived, though they may not resemble the very percepts of which they are conceptions: the vibrations of molecules are not like the perceived fact of heat, but they are like vibrations that are things perceived. That the process is checked by perceptual conditions means that if (for example) it is conceived that plants exhale oxygen, it must be shown to perception that the gas exhaled has the properties and reactions of oxygen; and the properties of pure oxygen are inferred from the reactions of a gas obtained under conditions such as to satisfy our perception that nothing else can be present.

It follows from this that the conceptual process, in spite of its highly symbolic character, is an imaginable one, at least to those whose imagination is tolerably powerful; and this has two consequences. First, imagination may prepare the way for conceptual theory; since by its means even atoms and ether may be seen, as by an indefinitely powerful magnifying-glass. Secondly, the fact that the conceptual process can be pictured, or intuitively represented, whether by visual or tactile schemata, brings it into the same plane with the perceptual process; so that Empirical and Physical Reality form one continuum, and thereby that satisfaction is obtained

for the sake of which the mind creates Physical Reality. Without intuition, no understanding.

There remain, however, two discrepancies between these modes of Reality. The first is that, whilst the Empirical is mainly static, the Physical is a world of incessant movement. The scene before me presents indeed some objects moving at various rates—the dashing swallows, the rushing stream, the browsing cattle; but the meadows and mountains give an irresistible impression of permanence, and even the sunshine seems a steady illumination. The conceptions of Physical Reality represent the whole as a scene of incessant change. The motions of animals are attributed to molecular motions going on inside them, most of which are active when the animal lies at rest; the hills are whirling with me through space in a frantically complex figure, and all their rocks vibrating with thermal and other latent forces: any apparent rest is relative to my position or my perceptive powers. The sunshine that gives such steady illumination dances past with incredible activity, and its apparent steadiness is mere sensation. That introduces the second discrepancy: Physical and Empirical Reality are only conceived as a continuum in respect of the primary qualities of matter, as if these were not sensation: the secondary qualities are regarded as connected with the primary only in Empirical Reality.

§ 4. So far we have only considered the Truth of objective consciousness, but in the subjective region we may draw parallel distinctions. Corresponding with the perception of things, there is introspection of mental states and processes, whether wholly subjective (like toothache), or (like yellow) objective in their first significance but now considered merely in themselves or in subjective relations. Introspection may be abnormal or pathological in various ways; but we are here concerned with its adequacy or inadequacy, because this is the condition of its truth in relation to subjective Reality.

The content of every introspection is, like the content of every percept, symbolic and, in that sense, representative of a whole comprising far more than the immediate and distinct consciousness of it. Generally, closer attention to any psychic

content is enough to bring to light elements that at first were undiscriminated. To realise this, any one who is not familiar with such matters has only to read the description of Anger or Fear in a psychological text-book; though indeed novelists and poets often say the same things in their own way. These writers draw our attention to much that the distracted mind neglects; but there is a great deal in a fit of anger that will never be set down in books. Perhaps the symbolic character of consciousness may be most easily seen in this, that every emotion develops through a series of stages, but we know what is the matter with us as soon as one begins: the initial stage is a sign of all that is to follow.

Direct analysis by mere attention shows us much, but indirect analysis brings out much more, as every one must have realised on first reading Berkeley's *Theory of Vision*: the first great triumph in Psychology of indirect analysis. This proves to us that we must have certain sensations which it costs some effort to become aware of. Clearly, therefore, introspection, like perception, is inadequate and representative or symbolic; and it is true, as distinct from real, so far as it signifies further possible content of introspection discoverable, immediately or conceptually, by exploration.

§ 5. Discoverable immediately or conceptually I say; for here too we may distinguish the Empirical Reality of introspection from something analogous to Physical Reality, namely, a conceptual system designed to connect and complete the inadequate and fragmentary contents of introspection. The possibility of such a system has been indicated by such conceptions as Leibniz's *petites perceptions*, Spencer's atomic feelings, and Fechner's subliminal consciousness. All these expressions point to depths of mental life that underlie, in indefinite remoteness and obscurity, all that can be brought within the region of self-consciousness: a mental life the laws of whose growth must contain the explanation (if there be any) of the work and play of our superficial thoughts and feelings. Such hypotheses are often scouted by those who think that physiological conditions give a sufficient explanation of the mind, and by those who teach that the limits of

introspection are the limits of analysis. But the former group are palpably mistaken, and the latter soon surrender to them. To take the final results of introspection as the limits of psychological analysis is as unreasonable as to confine Physics to the data of sense. Some would even make the perception of space an ultimate datum, though space is the subject of all Geometry, and has therefore an infinitely diversified content. But it seems to me that even the sensations of blue or yellow, however apparently structureless, as they are correlative with the functions of an ancient and complex organ, must carry in their constitution the records of that organ's growth. To fix upon any data as ultimate is to repeat the error of those "limitary cherubs" who, in the name of innate ideas or *a priori* forms, have affected to settle for us all the questions of nature and genesis; it is to infringe the interest of Reason in everlasting labour.

This conceptual system of Psychology, as it bears many analogies to Physical Reality, must be investigated by the Physical Method, proceeding from introspective data, through concepts, to introspective verification. But there are certain differences between the subjective and objective conceptual systems: (1) The subjective is not, like the objective system, the scene of incessant motion; for it is not in space, which is a condition of motion: but it is the scene of incessant change of quality, of intensity, and of feeling-tone. (2) The distinction of primary and secondary qualities has no place in subjective Reality, nor in sensations considered as subjective experience; for the whole of consciousness is real in the same sense and in the same degree. (3) Low-grade or sub-liminal consciousness in the psychological conceptual system is more difficult to imagine than the play of atoms and ether in Chemistry and Physics; for, by hypothesis, low-grade consciousness cannot be imitated by our imagination, which is always high-grade. One would like to be a dog, or a butterfly, or a spinal ganglion for a time; for the failure of imagination to follow the lower life discourages the understanding and makes it too readily acquiesce in merely physiological explanations. An introspective magnifier would be useful; but, if

relatively as powerful as those used in Physiology, it would still (like them in their own function) fall far short of revealing the *latens schematismus* and the *latens processus* of sensation. Biological and physical analogies must help, or some other way may yet be found.

§ 6. As to the truth of concepts, it may be considered, first, as a question of their consistency with one another; but this is sufficiently treated of in Formal Logic under the heads of Division and the Predicables. Secondly, there is the relation of concepts to Empirical Reality; and this, again, is treated of in Inductive Logic under the heads of Classification and Nomenclature. But, thirdly, there is the relation of concepts to Physical Reality; and this at first may seem to need no special discussion, for, it may be asked, what is Physical Reality except concepts? But it is much more; for the concept is a function of cognition, and beyond it lie the things to be known by it. The concepts of Physical Reality are symbolic of something; and their truth consists in signifying things and processes in such a way that inferences drawn from them can be verified in Empirical Reality: where waves from the depths of Nature come to the surface and break in the light of day. We verify perceptually as far as possible, but the weakness of our senses leaves a conceptual region which is believed to correspond to something imperceptible; just as perception itself does, except that perception is identical with Reality in that character which is a sign of the rest. That further region is conceived as if it might be perceived; and is, therefore, conceived on the analogy of perception, so that it may also be imagined. For if the conceptual system is reduced to merely arbitrary symbols, such as mathematical equations, these may be verifiable and very useful; but to formulate is not to explain, for it does not present to us the continuity of the World; nor, therefore, does it subserve that final use of science and philosophy, the raising of Nature into Self-consciousness.

The difference between the question of the truth of concepts in relation to Physical Reality on the one hand, and on the other hand in relation to Transcendent Reality, is that

Transcendent Reality is conceived of as having its being otherwise than as possible perception. But if, by hypothesis, it is imperceptible, how can it be conceivable? Undoubtedly, "Substance" and "Idea" present themselves to us as concepts; but can we assign them any distinct content or connotation and any reference or denotation beyond themselves? This, like the corresponding question with regard to percepts, is a traditionary problem of Metaphysics, and we must hereafter try to solve it. Philosophers often assure us the solution is unattainable, that the transcendent is unknowable; but it presently appears that this is only an exordium to stimulate curiosity whilst they go on to tell us all about it. They seem anxious to restrain the vagaries of other minds; unbridled speculation is such a waste of time, they say: like Locke, who nevertheless cannot restrain his own speculations concerning cherubim. But Locke, like Sir Thomas Browne, may have seen reason "to fear the prophecy of Elias," and that the time of this world was running to its dregs. We have better hopes, or at least we have longer views. Why should the human race, now assured of its youth, be in as great a hurry as when anticipating its decrepitude? Is it certain that philosophers can waste their time? Would they, if otherwise employed, be very useful? But meanwhile they do no harm: a statesman usually does more mischief by a single Act of Parliament than the whole line of philosophers have accomplished since Thales.

But we cannot hope to approach Transcendent Reality entirely by the Physical Method, proceeding from percepts through analogous concepts to empirical verification. To maintain that this is the only valid method for all investigations that deserve the name of science, no matter how largely the conceptual element may predominate in them: this I take to be the true position of Empirical Philosophy; and the Physical Method must be followed as far as it will lead us. The opposite method is to begin with concepts, to endeavour to establish their relations to one another, and to regard the success of this procedure, that is, the systematisation of concepts, as the sole requisite verification. Such a method

needs no organon but Formal Logic. Plato's plan of Dialectic makes the nearest approach to it, and Hegel has made the most elaborate attempt to carry it out. We are often assured that Hegel did not disregard the facts; and that is true: to disregard the facts is impossible, for without them there could be no sense in concepts. But he had no clear view of the place of facts in the method of investigation and proof, nor of the uses of facts in relation to different orders of concepts. Hence, so far as it is based upon facts, his Rationalism is only an unintelligent Empiricism. We must begin with experience, since otherwise there is no problem; and return to experience, since otherwise no solution is made good; and proceed on the analogy of experience, since otherwise there is a failure of that continuity and resemblance in which explanation consists. The use of quitting the cave is to find the essential nature and connection of the shadows, and to return, and to interpret them. But the chief concepts of the transcendent world, "Substance" and "Idea," have not the definiteness of content which the Physical Method presupposes. No inference has ever been drawn from them that could be verified by particular experience in perception or introspection. And the truth is, I think, that they are not concepts of science or knowledge, but of that background of Belief out of which knowledge has been differentiated as science has been out of knowledge. If such concepts are to be justified, it must be as appertaining to the necessary background of our picture of the World; and it should appear possible by fair inferences (though imperfect because unverifiable)—to trace in that obscurity a few faint outlines of resemblance to things that stand in the foreground and are more distinctly known.

§ 7. Reflecting on the above discussion, we find that to question the truth of perception or of conception implies that they are modes of Judgment. To distinguish these three processes may be necessary in Psychology or in Logic, but metaphysically the third is involved in the two former. Whether the phenomenon that suggests to me an oak or a chestnut will prove on inspection to have the further properties of such a tree; whether yonder rock is slate or granite, yonder

bird a swallow or a martin; or whether any of them are even solid bodies: these and innumerable other points in the region of present perception may be doubtful; and in deciding in one way or another, I judge. Similarly with the concept: it is not only that, as Hamilton observes, "every concept is a fasciculus of judgments," implying as many judgments as it comprises attributes and relations between the attributes; so that if the concept A has the attributes b, c, d, we may be said to judge, logically, that b, c, d, coexist, and that each of them determines A; but, further, if the concept is used cognitively, which is its only interest for Metaphysics, we judge that b, c, d, belong to the reality that A represents, and coinhere in that reality. Hence a doctrine of Categories or highest Concepts is properly a doctrine of Judgments, and is concerned with their truth or relation to reality. Kant shows that it is the reference to objects that distinguishes the metaphysical from the merely logical forms of the understanding. The Truth of Judgments, then, is the ultimate question as to truth of every kind.

A judgment comprises a sign and something signified: it is a representation or symbolic consciousness of the relations of connection or resemblance in which certain elements of reality stand to one another. There is no impropriety in saying that to judge is to conceive the relation of such or such terms; but it is always something more, namely, to believe in that relation; for in no other way can it constitute experience or science. The elements related may belong to the same order, Empirical, Physical, Transcendent; or these orders may be cross-related in a judgment: that oil of vitriol (for instance) is H_2SO_4, is an empirico-physical judgment. But let us avoid as much as possible the humours of technicality. Locke held that any body perceived resembled in its primary qualities the corresponding unknown substance; but he could not have called this an empirico-transcendent judgment.

Metaphysics, however, does not inquire into the truth of all possible judgments: it is enough to deal (1) with those for which no forms of proof are given by Logic or Mathematics, namely, judgments taken for granted by those Sciences them-

selves; (2) the first principles of the Natural Sciences, so far as they have been ascertained; and (3) certain judgments that have merely been preserved by philosophical tradition; for this tradition must be continuous. Metaphysics, then, is the criticism of those judgments, whether scientific or traditionary, which cannot be proved from other judgments, and therefore, strictly speaking, cannot be proved at all: judgments of which no methodical proof is possible, because method supposes some more general principle (which must be a judgment) on which to proceed. Yet, without method, how can there even be criticism? It becomes necessary to try to advance "considerations determining the mind" (in Mill's phrase), in order to induce reasonable people to grant some principle upon which a method may be founded. Hence the fundamental problem of Philosophy is the possibility of a criterion or test of truth.

BOOK I.—CANONIC

CHAPTER III

THE TEST OF TRUTH.—I. HISTORICAL

§ 1. Both in the preparatory and in the great age of Greek Philosophy, Reason was confident in her own powers. Daring and constructive thinkers seem to have been of Spinoza's mind that the truth reveals both itself and error: *sane sicut lux seipsam et tenebras manifestat, sic veritas norma sui, et falsi est.* Plato, indeed, mentions the principle of Contradiction as a ground of discrimination (*Rep.* 436 B), and infallibility (477 E) and distinctness (478 C) as characteristics of science in contrast with opinion; but although these remarks remind us of many anxious attempts in subsequent ages to define the nature of truth, for Plato they are rather descriptive than canonical, and show more security than caution. As in the course of investigation difficulties accumulated, he acknowledged that truth had not yet been attained, left the Good undetermined, as to the origin and nature of the world was content with probability; Aristotle, too, whilst carefully investigating the conditions of formal truth, or consistency, admitted Chance amongst the principles of things, and irreducible accidentia amongst the consequences. Yet they both assumed that truth was attainable, and that when attained it would manifest itself as a systematic explanation of a world of Reason; that such a world of Reason exists, and therefore is by Reason knowable. It was only in the age of speculative disappointment and of political and social depression that the force of negative criticism drove men to seek a criterion or test of truth: sedulous to lay sure foundations for the new structure of practical life; indisputable principles, if not of

Nature, at least of human conduct. It was in behalf of rational action that the Epicureans and Stoics tried to solve the initial question of Philosophy.

There were, in fact, two questions: (1) What is Reality? and (2) How do I know that my judgment corresponds with Reality?

According to Epicurus, a materialist of the School of Democritus, the criterion of truth concerning Nature is sense-perception, which must be distinct (*ἐναργής*) and ultimate, *i.e.* incapable of being shaken or confirmed by reasoning (*ἄλογος*). Touch is the most trustworthy of the senses, because it gives direct knowledge of the properties of the only reality in the world, atoms, when in sufficient mass to be perceptible. This is a criterion of Empirical Reality rather than of Truth.

Opinion and belief Epicurus traced to the persistence of perceptions in the mind, and therefore held that, to be trustworthy, they too must be distinct and verifiable by the senses; at least they must not be contradicted by the senses. Even the atoms, since they are not severally perceptible, can only be the object of belief, and they come under the rule that "concerning things imperceptible it is necessary to draw inferences from the phenomena." This is the way of analogy, and it implies a belief in the uniformity of Nature. It also implies that perception is our authority not only for particular sensations but also for their relations or synthesis; and that the synthesis of belief must also be derived from the perceived connections of things. The only definite synthetic principle discoverable in Epicureanism is the maxim that "nothing arises from nothing or perishes into nothingness." And this is now recognised as one of the constituents of the law of Causation; yet the way of analogy which governed the conjectures of Epicurus seems to have been concerned (if we may judge from the remains of Philodemus) not with causation, but with the properties of kinds (cf. Diog. Laert. x. 20, and Wallace's *Epicureanism*, c. x.).

Epicurus claimed the attainment of positive knowledge only so far as it touched human interests. As to the region of stars and meteors, he was content with any hypothesis that

was not contradicted by the senses; since any possible explanation of these things on physical analogies would dispense with the intervention of the Gods: contemplative idlers in intramundane gardens, for whose perfect leisure and repose he was always chiefly anxious.

The Stoics, materialists of the School of Heraclitus, also derived knowledge from sense-perception: the test of truth, they said, is the irresistibility of conviction (*κατάληψις*) that accompanies impressions. Hume's "superior force, vivacity, and solidity" is not quite the same thing; for *κατάληψις* was due rather to the apprehension of the Subject than to the impressions themselves. In fact, of course, both physical and mental agencies are necessary.

Next to sensations, according to the Stoics, certain conceptions are trustworthy, namely, those that are common to all men (*κοιναὶ ἔννοιαι*). But they must have been aware that such percepts or concepts could test only the elements of truth; for they had learnt from Aristotle that truth, or knowledge, requires a synthesis and can only belong to judgments; and nothing is more memorable of them than their sublime conception of the order, law, and unity of the World. No doubt they tried to arrive at such judgments and to correct and justify them by the logical methods which they studied and elaborated; but no logic can give an original synthesis, and their attempts to avoid this difficulty seem to have incited the later Pyrrhonists to attack the doctrine of the syllogism and all first principles on which syllogisms depend.

Cicero, though in speculative questions an Academic, followed the Stoics in moral philosophy; and one tendency of their school attained in his writings to great distinctness of expression: I mean the tendency, derived from the Cynics, to lay stress upon what seemed to them "natural" or according to Nature, as necessarily good and true. It was this that led them to seek the basis of truth in perceptions and in common conceptions formed by a natural process of growth (like Aristotle's *φρόνησις*), in spite of their addiction to the artificial processes of Logic and repugnance to the sensuous relations of human life. Cicero followed them in regarding perceptions as

generally carrying conviction in spite of frequent deceit; and the κοιναὶ ἔννοιαι (at least, of morals) appear in his writings as the famous doctrine of innate ideas: *sunt enim ingeniis nostris semina innata virtutum* (*Tusc.* iii. 1. 2).

Whether indeed this notion, so contrary to the earlier Stoic Psychology, was original with Cicero, cannot, I suppose, be known. It may be traceable to the Platonic reminiscence, which, Th. Whittaker tells us, in his *Neo-Platonists* (chap. v. § 1), was transformed by Plotinus into a doctrine of innate ideas potentially present. It also occurs in Epictetus, who asked, according to Arrian (Διατριβ. ii. 11. 3), whether of good or evil, of what we ought and ought not to do, there was ever any one without an innate idea (ἔμφυτον ἔννοιαν). This is something more definite and universal than the hereditary potentiality of virtue recognised by Plato and Aristotle. If the seed of virtue were allowed to mature, Cicero thought, Nature herself would lead us to a happy life. Moral ideas, common to all men, are clearest in children and those who stand nearest to the origins; being, in fact, the expression of that divine Reason which is the life of Nature in the human mind: *omnium consensus naturae vox est* (*Tusc.* i. 15. 35). It is vicious customs and institutions that obscure the light of Nature.

If, however, we inquire strictly for the test of truth in this theory, we can hardly find it in the innate ideas themselves, since some test is necessary to determine what they are: such as their universal recognition, the canon of catholic truth, *quod semper, quod ubique, quod ab omnibus.* The trace of this argument is left upon Locke's polemic.

By whom self-evidence was first alleged as the test of synthetic judgment, I cannot discover; perhaps by the mathematicians: for Plato (*Rep.* 510) says that the mathematicians set forth their principles as self-evident and rejected all proposals to prove them. It implies confidence not so much in a system of reason as in specific intuitions. At any rate, Galen (Θεραπ. Μεθ. i. 4) speaks of two kinds of manifest truth recognised by ancient philosophers: the one, perceptions of particular sensation, the other, intellectual cognitions, indemonstrable, but evident upon the first inspection. And of the

latter he enumerates: things equal to the same thing are equal; if equals be added to or taken from equals, the sums or remainders are equal; nothing happens without a cause; nothing arises from nothing or corrupts into nothing; and, finally, the principle of Excluded Middle.

If, then, we sum up the criteria which commended themselves to Greek philosophers, of various ages and schools, we may say that (1) the earlier inquirers trusted to a systematic or (at least) a comprehensive explanation of the world as its own justification; that then (2) the principles of logical consistency were worked out; that next, when partly by force of this Logic, partly from other causes, truth seemed farther off than ever, (3) trust was put in sense-perceptions, either for their clearness or their aggressiveness, as supplying the elements of knowledge and the means of verifying concepts and judgments; that (4) self-evidence was regarded as a ground for accepting axioms as well as percepts; that (5) naturalness, original endowment, universal consent—they come to the same thing—was more and more relied on by the Stoics; and that (6) on the whole, in spite of some inconsistencies, the uniformity of Nature (always implied in the belief in a rational world) became more and more explicit amongst both the Stoics and the Epicureans.

With the revival of Philosophy (that is, of personal unofficial speculation, the Philosophy of private judgment) the search for the Criterion revived; for the Middle Age, like that of the free Greek Cities, had its own confidence, though not exactly of the same kind; and now again criticism, accompanying vast social and political changes, had destroyed that confidence. The Renascence, like the later Greek schools, professed (at least, in its most conspicuous leaders) to seek knowledge for the sake of life, but with far wider interests and better hope than the Stoics and Epicureans, and in fact disinterestedly.

§ 2. The influence of those schools upon the moderns is very obvious. The moderns went back not to Plato and Aristotle—the latter especially having been discredited by new prejudices and unfashionable friends,—but to those who

stood nearest themselves; either (like Bruno and Cudworth) to the Neo-Platonists, or to the Stoics and Epicureans. Bacon may be said to have had Epicurean affinities; but it is not easy to state his criterion briefly and satisfactorily, nor is it necessary to attempt it, since this is not an exhaustive history of the subject, but an inquiry as to the main positions; and the unquestionable characters of Bacon's method, observation, comprehensive comparison, experiment, elimination, will be met with elsewhere.

The doctrine of Descartes, according to its most conspicuous and oft-repeated statement, is that those things are true which we clearly and distinctly conceive (*Discours*, P. iv); that is, a clear and distinct conception answers for the fact; and although the terms 'clear' and 'distinct' remind one of the Epicurean *ἐνάργεια* rather than of the Stoical *κατάληψις*, yet his derivation of such conceptions (according to the more prominent passages) not from perception but from the innate capacity of the soul, sufficiently indicates the line of tradition; and, indeed, he calls them *communes notiones*, though in some men they are obscured by prejudice (*Principia*, i. § 50). The truths which he thus adduced and relied upon were not only abstract concepts, such as self-existence and perfection, but also axioms: if equals be added to equals the wholes are equal (*Principia*, i. § 13), and that 'nothing cannot be the cause of anything' (*Principia*, i. § 75).

What Descartes understood by 'clear' and 'distinct' is explained in the *Principia* (i. § 45): "Clear I call that which to an attentive mind is present and open (*aperta*); distinct, that which, besides being clear, is so separated and marked off from everything else, as to contain in itself nothing but what is clear." That, then, is a true conception which is clear in its contents and distinct in all its relations. Descartes did not see that such ideas imply an already completed system of knowledge, and are to be hoped for not in the initiation but in the consummation of Philosophy. Consider the concepts of 'self' or 'perfection' in all their relations! No wonder he should complain that many people never all their lives perceive anything in the way in which alone it can be truly judged of.

Conceptions, clear and distinct *so far as they have been investigated*, must still serve the science of many a generation.

Perhaps, however, in spite of the frequency with which the criterion of clearness and distinctness of conception is insisted on by Descartes, and its prominence in the famous fourth part of the *Discours de la Méthode*, we ought to look for his views of systematic proof in the sixth part of that essay, where the use of experiments is explained. He there tells us that his philosophy, assuming at first certain principles of nature, dependent only on the creative activity of God, and derived from "certain seeds of truth that exist by nature in our souls," goes on to deduce from these the phenomena of heaven and earth; and that when, as sometimes happens, these phenomena are such that they seem deducible in many different ways, there is no other expedient but "to seek out experiments of such a kind that their results will not be the same if the explanation ought to be in one of those ways as it would be if the explanation should be in another way." That is to say, the test of truth is a crucial experiment according to the Physical Method, except that the premises are not inductions. The Uniformity of Nature which this method presupposes is represented by the perfect and immutable nature of God; but the experiment itself depends on sense-perception. And, in fact, whether Descartes is rightly to be considered as a Rationalist, relying upon pure thought as opposed to sensation, is very questionable. For although when speaking of ideas and principles he uses the verb *concevoir* or *concipere*, he also uses *percipere*: in the *Principia* having said (i. 30) that everything is true *quatenus clare et distincte percipitur*, he adds (§ 32) *sentire, imaginari, et pure intelligere, sunt tantum diversi modi percipiendi.* Hence it appears that he did not place the test of truth in conception in opposition to sense, but held that clear and distinct knowledge in whatever mode is its own assurance. But he is anxious to dissociate himself from the Epicureans (with whom there was some risk of confusing him); and, indeed, he seems to limit clear sense-perception to the subject-matter of Geometry as the sole invariable character of body (*Principia*, ii.

§ 11); although his speculations extended to many phenomena which did not then, and do not even now, admit of reduction to extension, figure, and motion.

§ 3. Descartes was a born system-maker, to whom doubt was an hypothesis and self-confidence an instinct; his speculative ambition was noble and boundless, though its expression was restrained by prudence. But as every man is imperfect, one must be set against another in the dialectic of History. Speculative caution is also precious, if uninspiring. There were more extravagant adventurers than Descartes: and Locke, therefore, set himself "to prevail with the busy mind of man to be more cautious in meddling with things exceeding its comprehension"; to find how far the understanding "has faculties to attain certainty," and in what cases it can only judge and guess (*Essays of Human Understanding*, i. chap. 1, § 4). He was a philosopher by occasion, not by profession; and it is absurd to criticise him with the same strictness as the rest of them. Upon every subject he was content to say the most sensible thing, and to refrain from any affirmation or denial that seemed extravagant or paradoxical.

According to Locke, knowledge consists in ideas, derived from sensation and reflection, and compared by the mind receiving them. Truth belongs not to ideas as such, but to propositions or judgments concerning their agreement or disagreement. The excellence of an idea lies in its being clear, distinct, and adequate; the truth of our judgment concerning it depends upon its agreement with its object (which it is a sign of), namely, either an idea in another mind, or some real existence (*Essays*, ii. 32, § 5). As to the latter case, sensations, or "simple ideas, which the mind can by no means make to itself, carry with them all the conformity which is intended, or which our state requires; for they represent to us things under those appearances, which they are fitted to produce in us" (iv. 4, § 4). But our ideas of sensation resemble the things sensed only in the primary qualities of body; and how even this can be known he never explains; ideas produced in us by secondary qualities have no resemblance to them at all (ii. 8, § 15). And ideas are never to be judged true of the

real essences of things, the constitution of their insensible parts (Bacon's *latens schematismus*); because they are never adequate to such a representation (ii. 32, § 24). Of such things in nature as fall not within the reach of our senses we can only judge by 'analogy'; as, finding that friction produces heat, we have reason to think that what we call heat and fire consists in a violent agitation of the imperceptible minute parts of the burning matter (iv. 16, § 12). Having no conception of inductive method, it may, he says, be suspected "that natural philosophy is not capable of being made a science"; though great probability is attained concerning objects, when the general consent of mankind concurs with one's own constant experience (iv. c. 16). So far as to material things.

Of our own existence we have 'intuitive knowledge' by an immediate comparison of ideas; it is "an internal infallible perception. In every act of sensation, reasoning, or thinking, we are conscious to ourselves of our own being" (iv. c. 9). This implies that our "being" is an idea immediately compared with every sensation or thought. The existence of God may be demonstrated from the knowledge of our own existence and the maxim that "bare nothing cannot produce any real being": which also we know by intuitive certainty (iv. c. 10).

Further than this, truth is unattainable with regard to particular existences; but knowledge admits of further extension, for it includes all the agreements or disagreements of our ideas amongst themselves, as expressed in any proposition (iv. c. 6). General propositions concern not existence, but only the relations of our abstract ideas. When the mind can bring two ideas together to perceive by immediate comparison their agreement or disagreement, this we may call intuitive knowledge; and this gives the greatest certainty. But if the ideas to be compared cannot be brought together immediately, the mind "is then fain, by the intervention of other ideas, to discover the agreement or disagreement which it searches"; and this is reasoning or demonstration. Each step of such reasoning must be intuitively certain (iv. c. 2).

Hence arise the Sciences; of which Mathematics is a great example; whilst Physics and Moral Philosophy are very back-

ward. And in Physics the reason of this is, that our ideas, being inadequate to the real essence of things, an intuitive comparison of them is ineffectual to discover the truth. For it can assure us of nothing that passes without the mind. But in Moral Philosophy our backwardness is due to indifference and infirmity; because the "desire of esteem, riches, or power, makes men espouse the well-endowed opinions in fashion." For in Morals, as in Mathematics, the ideas to be compared, such as angle and circle, murder and government, are constructed by the mind itself, so that the nominal and real essences coincide. There is nothing, therefore, to prevent Moral Philosophy from becoming as demonstrative as Geometry, except the greater complexity of its ideas, and the impossibility of representing them to sense-perception. Unfortunately, as examples of axioms of demonstrative morals he offers only identical propositions: "Where there is no property there is no injustice," and "no government allows absolute liberty" (iv. c. 3).

In short, Locke's demand for certainty seems to have been solely determined, like that of the Stoics and Epicureans, by practical needs. By sensation and the intuitive comparison of ideas we have enough knowledge to guide us in "this twilight state": God has made the world habitable, though by no means transparent. The most pious of philosophers, Locke, never thinks of man except as God's feeble creature and ceaseless care, ill-equipped for any knowledge that subserves not convenience or virtue. How near this position is to speculative Scepticism it hardly needed the light of Hume to show us.

§ 4. Contrast with it the primitive security of Reason in herself as we find it expressed in Cudworth's *Eternal and Immutable Morality*: "Now all the knowledge and wisdom that is in creatures whether angels or men, is nothing else but a participation of that one eternal, immutable, and increated wisdom of God" (i. 3). "The first intellect is essentially and archetypally all rationes, and verities, and all particular created intellects are but derivative participations of it" (iv. 4). "But sense being but an idiopathy, we can-

not be absolutely certain by it that every other person or animal has the same passion, or affection, or phantasm in it from the same corporeal object that we ourselves have." Hence, "the necessary truth of no geometrical theorem can ever be examined, proved, or determined by sensible things mechanically. And though the eternal, divine intellect be the archetypal rule of truth, we cannot consult that neither to see whether our conceptions be commensurate with it. I answer, therefore, that the criterion of true knowledge is not to be looked for anywhere abroad out of our own minds, neither in the height above nor in the depth beneath, but only in our knowledge and conceptions themselves. For the entity of all theoretical truth is nothing else but clear intelligibility, and whatever is clearly conceived is an entity and a truth; but that whatever is false, divine power itself cannot make it to be clearly and distinctly understood." Hence it comes to pass that "philosophers and divines have without scruple measured the divine omnipotence itself, and the possibility of things, by their own clear intellections concerning them" (v. 5).

This is the doctrine of intuitive knowledge. When Descartes says that any universal truth or axiom is "innate," he seems to me to claim merely that it is intuitive. Spinoza's attitude, as we observed, shows just the same confidence: "He that has a true idea knows that he has a true idea." Such certainty may be attained either by deduction from adequate ideas of the properties of things, or by intuition (*scientia intuitiva*), as when $1 : 2 :: 3 : x$ being given, everybody sees that $x = 6$ (*Ethica*, ii. 40). By the latter method, he says in the *De Intellectus Emendatione*, he has not yet been able to know many things: and no wonder, for by intuitive knowledge I understand him to mean direct insight into what is usually discovered by deduction. But in the examples given by Spinoza (much the same in both works), namely, direct cognitions of the equality of simple ratios, we have the same mental activity as in the intuitions of Locke and the clear intellections of Cudworth. It is not imagination, in any sense in which these three authors would intentionally use the word; nor is it "pure" understanding, in

the sense of depending on definitions alone; but a process in which imagination and understanding are undifferentiated.

There is an instinctive disposition to know, as well as to do: it operates with representative ideas; and I take it to be essentially a kinæsthetic imagination, working under a given cognitive interest. The typical case is geometrical intuition. It may, or may not, have pictorial or quasi-pictorial accompaniments, according to a man's cast of mind. Whewell says intuition is "imaginary looking" (*Hist. of Sc. Ideas*, ii. 9, § 5); and it would be an interesting inquiry, how far the philosophers have left in their writings traces of their mental habits, as visile, motile, etc., or only verbile, mistaking the custom of language for insight; and what are the correlated doctrines. Plato and Bacon are plainly visiles; but visualisation of the pictorial sort is, after all, never more than an accompaniment or introduction to the kinæsthesis; and whilst in some men it persists, as a sort of generous excess or extravagance of ideation, in others, for greater concentration, it is omitted, like many other links, in the economic abbreviation of organised processes. The depth of the differences between visile, audile, motile, types, is easily exaggerated: motility is fundamental in objective judgment.

But in such "imaginary looking," what is it that is seen? Cudworth and Spinoza are deplorably vague in their statements. Locke in his fourth Book (chaps. i. ii. iii.) is much more explicit, and indicates relations of likeness and difference, equality and inequality, as the contents of intuition, in contrast with relations of time and place, of which we can very imperfectly discover uniformities, and only by experience. It was probably from these passages that Hume derived his doctrine; and, I believe, he was the first to set the matter in a clear light. In the *Treatise* he begins the first section of Part III. by re-enumerating the "seven different kinds of philosophical relation," and says: "These relations may be divided into two classes; into such as depend entirely upon the ideas which we compare together, and such as may be changed without any change in the ideas." Those that depend "solely upon ideas can be the objects of knowledge

and certainty," namely, resemblance, contrariety, degrees in quality, and proportions in quantity or number. Of the other three relations, situation in time and place, identity, and causation, we receive information from experience and not from abstract reasoning or reflection. Such remarks, immediately following Hume's criticism of Mathematics and introducing his criticism of Causation, constitute the central turning-point of his work, and may be compared to the metabasis of a tragedy. Intuition, demonstration, the self-evident concatenation of reasoning are only possible in some mode of resemblance. If the resemblances are merely of qualitative terms, we are restricted to climbing up and down in Porphyry's tree, proving that Bucephalus is an animal, and that some animal is Bucephalus. Resemblance of quantity opens the whole range of Mathematics. But of coexistence, succession, identity, there is no intuition or demonstration, but only inference from observation.

Still, even in the intuition of resemblance or equality, the terms compared are grounded in experience. And so, of course, are all differences, and amongst them quantitative differences or ratios, which are the materials of an intuition of equality, that is, proportion. Similarly, relations of coexistence and succession, having been learnt by experience, become the materials of intuitive comparison; and it is by this means that all the Laws of Nature (constant relations of phenomena) are explained by discovering their resemblance to one another. And as the ultimate form of all such resemblance is causation, this (as Hume says) is the sole foundation of our knowledge concerning either identity or regularity of coexistence and succession amongst concrete things. Compare the discussions of reasoning by intuitions of conjunct and of disjunct relations in Spencer's *Principles of Psychology* (Part VI. chaps. i.-viii.). He has not made it clear enough that intuitions of disjunct relations involve a comparison of the terms related; has omitted, in fact, the equivalent of the minor premise in a syllogism. This is true of proportion as well as of syllogism.

§ 5. Leibniz's views of the nature of truth are, historically,

very important. In the first place, he divides propositions into those of fact, those of reason, and those that are mixed, that is, derived from premises of both the former kinds. General propositions of Reason are necessary, and their opposites are impossible; those of Fact are obtained by observation or induction, and are not necessary, because we do not see their necessity. Mixed propositions follow as to certitude their weaker premise, that is, the proposition of fact upon which they depend (*Nouv. Ess.* iv. 11. 13; cf. *Monadologie*, § 33).

The foundation of our certitude as to universal and eternal truths is in the ideas themselves, and (like a pure and intelligible idea, such as being or unity) does not depend upon the senses (*N. E.* iv. 4. 2). The chief necessary truths are the principle of Contradiction—that of two contradictory propositions one is true and the other false, or that which involves a contradiction is false; and the principle *de la raison déterminante* (or *suffisante*)—that is, that nothing happens without a cause, or at least a *raison déterminante*, to show *a priori* why it exists thus rather than otherwise. To an omniscient Being there must be such reasons; though they may not be clearly known to us, or even, for the most part, cannot be known to us at all (*Théodicée*, i. 44; *Monadologie*, 31-32). In his *Remarques sur le livre de M. King* (§ 14) we read that one may say in some sort that these two principles are implied in the definitions of True and of False. Still, eternal truths are at bottom all conditional, that is, they posit the existence of the subject: thus 'Every figure that has three sides has three angles' means, 'Supposing a figure to have three sides, the same figure has three angles' (*N. E.* iv. 11. 11).

The first truths of fact, or *a posteriori*, are the immediate perceptions of our own existence and of our thoughts (*N. E.* iv. 9. 2). But of an universal truth we can never by induction from any number of particular experiences prove the universality, without a knowledge of its necessity by reason (*N. E.* i. 1. 5). Nor is certainty of innate principles to be based upon universal consent; for all truths that are not

primitive should be demonstrated (*N. E.* i. 1. 4). Of course 'universal consent' can only be known by induction. The principle of sufficient reason is indeed applicable to truths of fact, or contingent truths, though we can rarely trace it. Every event depends upon conditions, and these upon others, in a series leading back to God: a necessary substance outside of the series of contingencies, *dans laquelle le détail des changemens ne soit qu'eminemment*, but which is the last and sufficient reason of them all. The foundation of all truths is the supreme and universal spirit whose understanding is *la région des vérités éternelles*; and these contain the sufficient reason and regulative principle of existences themselves and, in a word, of the laws of the universe (*N. E.* iv. 11. 13; *Monadologie*, §§ 36-38). This is inconsistent with the position that eternal truths are conditional.

Most important in the history of Philosophy is Leibniz's doctrine that an induction, never being complete, cannot give us necessary truth. This had been an ancient sceptical topic, but it now derived fresh significance from the progress of physical science. Together with Hume's criticism of causation it led Kant to write the Transcendental Analytic. The doctrine is groundless if there is an uniformity of Nature, and if our experience is a fair sample of Nature; which there is no reason to doubt: for the necessity of a law has no dependence upon our seeing or feeling its necessity. Leibniz, however, seems to have held that in our experience there may not be any necessary order; for although he tells us (*Discours de Métaphysique*, § 6) that there is an order in everything that God does, yet his explanations show that to us, in his opinion, this order may present the utmost irregularity. Natural processes obey certain *maximes subalternes*; but Nature is only a *coustume de Dieu* (§ 7), which may be altered whenever He sees reason. It is by Him, for Him.

This order, such as it is, can nevertheless be known analytically from the complete concept of an individual substance: for such a concept is infinite, including all the determinations of the substance, and therefore its whole history and relations to everything else: so that every substance is a

mirror of the world. God, then, having a concept of any substance or of the world, sees in it the ground and reason of all truths; and every such truth is an identical proposition (§ 8). Hence the principle of sufficient reason is not really co-ordinate with the principles of Formal Logic; for the analysis of the concept of the world in the mind of God requires only Identity and Contradiction.

The analytic method of Formal Logic and Mathematics became for Leibniz an Idol of the Den: it was to explain everything; but in a mind not wholly devoted to scientific interests it provided excuses for obscurantism, and issued in puerile inconsistences.

§ 6. In the *Transcendentale Logik* (*Einl.* § 3) Kant says that a criterion of material truth cannot possibly be found, because such a criterion must hold good of all material cognitions, whereas their truth depends upon their particular contents, being in fact the *Uebereinstimmung einer Erkenntniss mit ihrem Gegenstande.* But, as Henry Sidgwick observes in *Mind* (No. 33 N.S.), this argument assumes "that true cognitions as such cannot have any *common* characteristic except that of agreeing with their objects; but that is surely to assume the very point in question." Accordingly, it is easy to find in the *Critique of Pure Reason* an investigation into the criterion of truth, and the above passage may be considered as an oversight.

Kant followed Leibniz in holding that true or strict universality cannot be known by experience. A necessary and universal judgment must be known *a priori*; and such judgments—necessary, universal, and synthetic—are found in Mathematics, in all physical sciences, and are, indeed, implied in the possibility of experience itself and its certainty according to rules (*K. d. r. V., Einl.* ii.).

But the principle of Contradiction, so important to Leibniz, he regarded as having only logical validity as the criterion of all analytical cognition, and therefore altered its form of statement. Instead of "It is impossible that anything can at the same time be and not be," where the mention of 'time' is foreign to merely logical use, he wrote: "Nothing can

have a predicate that contradicts it" (its definition); for in the usual statement incompatibility is alleged between two supposable predicates of the same subject, both of which may be true at different times; not, as it should be, between the predicate and the subject itself, which is always the same. The point is that a predicate whose truth depends upon time implies a synthetic judgment, and the principle of Contradiction is to be reserved exclusively for analytic judgments. But, thus restricted, the principle applies only to a contradiction in terms; whereas synthetic propositions may be contradictory without any reference to time. Must we then invent another principle to demonstrate that one of them is false?

For synthetic propositions (Kant goes on), in which the predicate is something quite different from the subject, we require some other criterion than the principle of Contradiction. The different elements of a judgment must be brought together by the imagination into the unity of apperception; and, further, if the judgment is to have objective reality, it must be related to some actual or possible object of experience, without which it is a mere playing with representations (*Vorstellungen*). (*Transcendentale Analytik, Buch* II. 2nd *Haupst.* 1. 2.)

Toward the end of the same Book, under the *Postulate des empirischen Denkens*, we find a fuller account of the criteria of objective truth. That is *possible*, he says, which agrees with the formal conditions of experience both as to intuition and conception: that is to say, it must be capable of existing in time and space and of being determined by the Categories. But to be *real* (*wirklich*) it must also cohere with the material conditions of experience; perception, and therefore sensation (*Wahrnehmung mithin Empfindung*), is requisite. It is not, indeed, requisite that we should immediately perceive the object itself, but we must perceive something with which it is connected according to the analogies of experience; thus magnetic matter is not directly cognisable, but only by seeing how a magnet attracts iron filings; though, if our senses were more acute, we should perceive the magnetic matter itself. It is in this sense that

we must understand the expression in the foregoing paragraph: "related to some actual or possible object of experience." Finally, that is *necessary* whose coherence with reality is determined according to universal conditions of experience, that is, as an effect of known causes. The category of necessity, therefore, is only applicable to phenomena, not to substances, which can never be regarded as empirical effects, or as beginning or changing.

We may be surprised that in this passage, after speaking of "the universal conditions of experience," Kant only particularises causation. But, plainly, the general meaning is that the criterion of synthetic truth is not some principle that may, like the law of Contradiction, be directly applied to any given analytic judgment merely on its own merits, but demands that every judgment shall be in harmony with all others in a phenomenal world, or experience, which constitutes a possible representation in one unity of apperception. This, however, is a characteristic common to all cognitions of material truth, the very thing which in an earlier passage Kant had declared to be impossible. It is the complex content of Empirical and Physical Reality according to a system of laws, for which, in any particular detail, no general anticipatory principle can be laid down, except that it must involve sensation.

§ 7. The importance to Kant of the Category of Causation as an universal condition of experience may be attributed to the ever-increasing interest of the physical sciences. To establish the possibility of such bodies of necessary truth concerning phenomena, against Rationalism which disparaged experience, and Scepticism which disparaged the necessity of law, was one of the three leading purposes of the Critical Philosophy. A very different procedure brings Mill to a similar result in signalising Causation as the ultimate ground of the sciences of Nature. He was in no way influenced by Kant, whose writings were little studied in this country until after Mill had completed the circle of his ideas; and it must always be regretted that he saw Kant only in the distorting mirrors of Hamilton and Whewell. But having set himself

the task of explaining the methods of science, and of supplementing and perfecting the Aristotelian Logic by discovering the ground of all generalisation, he was led to recognise the law of causation as that which is implied in all the canons of experimental proof. The want of any such governing principle is the chief defect in Bacon's Organon: the defect was made good by Hume, who showed that causation is the ground of elimination: and by means of it Mill was able to amend the Baconian method of observation, comparison, elimination, verification; to extend it by recognising the part of Mathematics and deductive reasoning, and to draw the outlines of the Logic of Induction in (I believe) their permanent form.

Mill's writings present a fair summary of the results of the Empirical Philosophy in the middle of the nineteenth century. The Test of Truth is experience: in Psychology, introspection; in the sciences of the external world, the senses. But experience needs interpretation; it is subject to illusion; for every state of consciousness enters into associations with others, which may obscure it or be confounded with it; and all such growths must be disentangled in order to discover the immediately present idea or sensation. Observation always consists partly of direct consciousness, partly of inference: this cannot be avoided; but good observation requires that we should be aware of the distinction between the immediate and the inferential factors, and verify the inferential (*Logic*, Book IV. chap. i.; Book V. chap. iv.).

But science consists not merely of observations, but of Laws, and these are generalised after a comparison of observations: they state observed uniformities in the connections of phenomena. In order to know and formulate such general laws, we must have general or abstract ideas or conceptions; and these are arrived at by comparing individual things: a comparison of white things forms the abstract idea 'white'; of round things, the idea 'circular.' When such ideas have been formed they become types with which to compare further particular things (Book IV. chap. ii.).

To fix an idea it is generally connected with a word,

though other signs may serve as the point of attachment; and it is then possible to carry on a train of thought by means of the signs without always referring to the ideas or the things they represent (*On Hamilton*, chap. xvii.).

Laws, however, though expressed in the signs of conceptions, are not laws of ideas, but of the phenomena denoted. The chief kinds of laws are (1) those of Mathematics and (2) those of Causation. "The axioms of mathematics are experimental truths; generalisations from observation"; *e.g.* that two straight lines cannot enclose a space; that $1+1=2$; etc. (Book II. chaps. v.-vi.). The Law of Causation is generalised from a comparison of less extensive uniformities of succession; and these are found by observation of particular sequences of events. There is no method of proving it, because there is no more general principle; but it rests on uncontradicted experience. Having assumed it, a ground is obtained for the methodical proof of all other laws according to the Canons; and then every law so established confirms the major premise, the law of causation. The method must not be regarded as superseding experience or having any authority of its own: causation, the method of induction, and all particular laws have only one basis, experience itself (Book III. chap. xxi.).

The evidence, says Mill, may now be considered, for practical purposes, complete; but theoretically we must reflect that Causation, being based on experience, cannot be assumed to prevail far beyond the limits of experience: *e.g.* in remote parts of the stellar universe (Book III. chap. xxi.): and that it involves no necessity (Book III. chap. ii.). We may understand 'necessity' to mean either: (1) a strong feeling of connection, which may be due to associations by no means corresponding with universal experience; or (2) necessary dependence on certain premises. In the latter sense, laws of Mathematics or Causation are necessarily true, if the axioms are (Book II. chap. v.); they are hypothetically necessary.

Finally, experience is confined to phenomena; and therefore all axioms and conceptions, being derived from experience, are concerned only with the order and relations of phenomena,

have no hold upon "matter" or "mind" *per se*. In fact, these very notions are only constructions from experience.

§ 8. In the latter part of the nineteenth century the theory of evolution in its application to mental life gave so new a turn to certain doctrines of the Empirical Philosophy and to the whole of Psychology, with which those doctrines were intimately connected, that it might be expected to throw some fresh light upon the old problem of the Criterion of Truth.

Spencer discusses the test of truth in his *Principles of Psychology*, Part VII., with special reference to the metaphysical controversy between Idealists and Realists (cf. his essay on the *Test of Truth*). This controversy, he says, persists because the parties to it do not, or will not, agree upon a criterion, yet "there must be somewhere, in some shape, some fundamental act of thought [some ultimate law of intelligence, § 417] by which the validities of other acts of thought are to be determined" (§ 416). In chap. xi. he states this Universal Postulate: "The inconceivableness of its negation is that which shows a cognition to possess the highest rank, is the criterion by which its unsurpassable validity is known" (§ 426).

This principle must be clearly understood and carefully applied. The inconceivable is not to be confounded with the merely incredible. "An inconceivable proposition is one of which the terms cannot by any effort be brought before consciousness in that relation which the proposition asserts betwen them": "An unbelievable proposition is one which admits of being framed in thought, but is so much at variance with experience that its terms cannot be put in the alleged relation without effort." It is unbelievable that a cannon ball should be fired from England to America, but not inconceivable: but it is inconceivable that one side of a triangle should be equal to the sum of the other two, not simply incredible (§ 427).

In applying the criterion we must consider the kind of proposition to which it is applicable, and do our best to apply it rigorously. The kind of proposition to be dealt with is not

a complex one, of which the terms and their relations are liable to be indefinitely conceived, but a simple one which is "not further decomposable" (§ 428). "That there are antipodes," a proposition once inconceivable (as Mill urged), is too complex to be tested in this way. Fairer examples are: "whatever resists has extension," and the axioms of Mathematics and Logic. Again, in the most sincere endeavour to apply the criterion, we are liable to lapses of thought and attention; hence "that must be the most certain conclusion which involves the postulate the fewest times" (chap. xii.).

This criterion is a higher warrant for a cognition than any direct appeal to experiences, such as an empiricist might make, because "it represents experiences almost infinitely numerous in comparison." Propositions of which the negations are inconceivable depend on nervous structures developed through innumerable generations in correspondence with external relations, and are fixed in proportion as the outer relations are fixed. The inconceivableness of the negation of an axiom results from the impossibility of inverting the actions of the correlative nervous structures (§ 430).

Now it is not my object to discredit any useful criteria of Truth; I would gladly see them multiply; but this is impossible as long as any of them claims to be exclusive. It is therefore necessary to draw attention to an ambiguity in the use of the term "inconceivable." Spencer has distinguished it from incredible; but there remains another cognate term, "unimaginable," and this he seems to have overlooked. The opposite of the judgment "whatever resists has extension" seems to me unimaginable, but not inconceivable; and its unimaginability no doubt depends upon the fixed connection of correlative nervous structures. But inconceivability requires that the difficulty of conception should result from the definitions or meanings of the terms; and I find nothing in the meanings of 'resistance' and 'extension' to prevent these terms being separated in thought. If their separation is to be called inconceivable, it must be in a psychological, not in the logical, sense. It is otherwise with such an axiom as "Things equal to the same third are equal." In this case the cognition

is not indeed merely analytic, depending on the meanings of the terms only; but the synthesis involved is nevertheless guided and determined by the meanings of 'equality' and 'sameness': the attempt to compare in thought the 'two things' with the 'third' is governed by the caution that severally they are to be really equal to it, and that it is to remain strictly the same thing. Hence, however, the axiom is far from being a simple proposition.

That this distinction between the unimaginable and the inconceivable is not impertinent may perhaps appear, if we inquire how they are severally affected by the alleged guarantee of neuro-psychical evolution. Such a guarantee, by the way, is not to be mistaken for a *circulus in demonstrando*: this seems to me a puerile objection. Spencer's design is, I take it, not to give a reason for the criterion itself, but to show how it has come to be the foundation of reasoning: his argument is explanatory, not demonstrative. If we are now to determine the test of truth, it is reasonable to do so, in view of all our present knowledge; for it must agree with all the structural lines of that knowledge; and the reference to organic evolution has especial weight on this ground, that the test of truth, whatever it be, must be reconcilable with the history of the human mind. On the other hand, this very reference draws attention to the limitations attaching to Spencer's criterion, namely, the experiential range of the zoological individual, a range so narrow, indiscriminate, and merely practical in all sub-human species, that it cannot be supposed to include 'a fair sample of all Reality.' Is it not more reasonable to suppose that such experience would give rise to almost inexpugnable prejudices, such as the disbelief in antipodes, than that it would prepare a criterion of universal truth? But whatever influence sub-human experience has upon our minds, it must affect imaginations rather than conceptions; for imagination is an outgrowth of perception, and is exercised by many animals; but conception, though some rudiments of it may exist in some species, yet attains any degree of development only in man. There must be a considerable development of the signs of thought before thoughts

can be compared according to the meaning of their signs. And if we consider the definiteness and the caution necessary in conceptual thinking, and how much this depends upon discipline (though some men have an apter disposition for it than others), it seems that those who are judges of what is inconceivable must be few, and to be selected rather for their education than for their ancestry; and not at all for their remote ancestry; which, beyond a few generations, is the same for all mankind, and common to Socrates and Sambo.

Again, granting that the inconceivability of the negation may have some value as a test of truth, still it seems to hold a secondary place, whilst the direct intuition of relations is the primary and essential ground of intellectual certitude. As Spencer says, the axiom concerning equal magnitudes "was held by the Greeks, no less than by ourselves, as a direct verdict of consciousness from which there can be no appeal. Each step in each demonstration of Euclid we accept, as they accepted it, because we immediately see that the alleged relation is as alleged; and that *it is impossible to conceive it otherwise*" (§ 428). But has not the last clause, which I have italicised, somewhat the air of an afterthought? Is it not the immediate insight into the equality or inequality of the relations compared that carries conviction to the reader of Euclid? They, I believe, are very few who at each step try to think the opposite; though to do so would certainly be a harmless, and might even be a wise, precaution.

From this brief survey of the history of the Test of Truth it appears that modern inquirers have, on the whole, confirmed the conclusions of the Greeks: (1) the principles of logical consistency have been recognised as necessary to systematic thought; (2) sense-perception has been generally accepted as the test of Empirical Reality (though its merely phenomenal character has been oftener insisted on), and the improved analysis of Relations has shown that the connection of particular phenomena in time and space can only be known by observation; (3) the self-evidence of intuition has been acknowledged by thinkers of schools the most opposed on other grounds, and clearness and distinctness have been treated as

essential to all cognition; (4) the value of general consent, though not frequently appealed to and sometimes denied, was defended by the Philosopher of Common Sense, and the agreement of competent judges is generally effective, if not conclusive; (5) the Uniformity of Nature, as the necessary correlate of consistent thought and a rational system of experience, and as implied in every inference and induction, has been generally assumed, and often explicitly stated. It is at this point that the moderns have made the greatest advance upon ancient thought, by defining the principles of Continuity and Conservation in all changes of the world, and by showing their complication with the explanatory function of Understanding. Hume and Kant agreed in signalising Causation as the essential judgment that gives coherence to the everlasting movement of the world. This was probably suggested, as it is continually illustrated, by the progress of the physical sciences; and it is this that gives us the surest grounds for hope that in the course of ages a comprehensive and systematic explanation of Nature may justify the confidence of Reason in herself.

CHAPTER IV

THE TEST OF TRUTH.—II. ANALYTIC

§ 1. (*a*) THAT sense-perception is the criterion of Empirical Reality must be assumed by every science or philosophy that professes to be a study or explanation of experience. However remote the explanation of experience may be from its immediacy, even if the explanation be sought in transcendent Ideas, nothing can be done, there is no assignable problem, unless the immediacy is accepted as matter-of-fact. After Plato's dialectician had spent some time in that upper region where things are to be seen in their absolute nature, his duty was to return to the cave and instruct his former companions concerning the shadows on the wall; but his task would be impossible unless these shadows had a definite character; its possibility would be strictly proportional to their definiteness, and its value to their interest for human life.

It must be further assumed that the contents of sense-perception can be determined for a normal subject by eliminating personal errors, and that it is possible to discriminate between what is directly observed and what is inferred, represented, or signified. But how to ensure these conditions is the problem of Methodology, not of Metaphysics. We can see, however, that whether that which is inferred or signified is really connected with that which is observed, can only be known either by further direct observation or by hypothesis and verification. Everything perceived—say a tree seen in the meadow—is a visual picture, including or seeming to include various qualities which, as they are only knowable by other senses than the eye, cannot in fact be seen, but

are associated or integrated with the visual picture and sub-represented in it; whether they are truly represented must be discovered by exercising the other senses.

It must again be assumed, then, not only that a single perception gives Empirical Reality, but also that the connection of discriminated perceptions in one judgment gives Empirical Reality. This is implied in verifying the represented contents of a thing perceived; and exactly the same assumption is made in perceiving the whole context of things that constitutes Nature or objective experience. The order of things in place and time can only be known to the understanding by the connection of discriminated perceptions in one judgment, and of many such judgments in one comprehensive unity of apperception; but the source and the verification of such judgments is the detail of sense-perception.

Reflective analysis of Empirical Reality has two consequences. First, the feeling of Reality seems to evaporate; immediate experience turns into a shadow-world; and no wonder, for the feeling of Reality depends not on discrimination and judgment, but upon the growth of perceptive powers in organic consciousness. Empirical Reality is originally constructed upon the animal plane of intelligence, and even such confidence as deliberate judgment possesses is transmitted to it from the perceptive system. Hence intuition is an "imaginary looking." But, secondly, the reflective analysis of immediate experience reveals its miscellaneous and fragmentary character. Although human perception is impossible without classification, still the resemblances recognised in perception by no means satisfy the human understanding; and this gives rise to attempts at constructing conceptual systems; which, when constructed, are sometimes used to disparage sense-perception as an illusion and deceit: data and verification are supposed to be sublated by an hypothesis that derives from them its whole vitality.

(*b*) One way of disparaging sense-perception by means of concepts is to distinguish between formal and material truth, and to assign certainty and necessity only to the formal. But "formal truth" and "material truth" are both of them

contradictiones in adjecto; for the essence of truth is the correspondence of form with matter, the verifiable agreement of judgment with Reality. It is in this sense that truth is the subject of Metaphysics.

In Logic, indeed, the distinction between form and matter is all-important: for first, it determines the limits of that Science; which discusses the form of propositions or judgments, that is, the relations of terms, and whatever is implied therein, without regard to any special character of the terms; and secondly, it thereby makes conspicuous the inadequacy of a merely logical treatment of any concrete matter of fact apart from observation. The Logician says (or should be understood to say), let us see what can be said about the relations of things without considering the things themselves, or about the form of knowledge apart from the things to be known. This may lead to consistency, but not to truth.

But the problem of Metaphysics is altogether different from this; it is to survey knowledge in relation to existence; if possible, the whole of knowledge in relation to the whole of existence; and therefore cannot regard the forms of the world apart from the world itself, unless they exist separately. Now they are only regarded as existing separately according to a certain possible doctrine ascribed to Plato. But that doctrine turns the forms or Ideas into the essential Reality, with which our knowledge can only be a correspondence. For Metaphysics it is true that this Ideal Theory is but a duplication of Nature, for the metaphysical problem remains the same. And so it must if noumenal Reality be the presence of things to the Divine mind, where they exist not merely formally but eminently, not in bare relation but in greater fulness and glory than for us. Reality in whatever mode is always the object, and can never be the content, of Metaphysics; nor can any conceptual system concerning Reality convince the human mind that is not verifiable by human organs, by the prying eye and the searching finger.

Hence the vanity of any such scheme as Locke proposed for a Moral Philosophy based upon ideas which we make for ourselves, concerning property, justice, and other presumptive

contents of the original contract, not upon observation of the Empirical Reality of Morals, that is, human life. It could only be a place of verbal propositions where the law of Contradiction was supreme. Whether that law has any application to Reality will be considered in Chapter XIV.; but as a test of formal or analytic "truth" (more properly consistency), the place given it by Leibniz and Kant, it can have for Metaphysics only a methodological interest in the elaboration of concepts.

(*c*) The universality of a belief, in the sense that it has been held by all mankind, was justly rejected by Leibniz as a test of truth. If a Church takes the universal acceptance of a doctrine by its adherents to be evidence of truth, it may mean that the doctrine has been acknowledged by all Councils, and that may be ascertainable. But the assent of all mankind can only be discovered by exhaustive observation: as impossible in the case of man as in any other kind of natural objects. Attempts to carry out the investigation have led to much cross-examining of timid troglodytes and sullen anthropophagi; but many a tribe near to the origins, a depository of primitive wisdom, has departed beyond the reach of your questionnaire: those precious witnesses, the Tasmanians, have just escaped, and we shall never know whether *ex nihilo nihil* was a tenet of theirs. For my part, I deny that, in a philosophical question concerning men, the zoological definition of Man affords a satisfactory means of determining the individuals referred to.

It is true, of course, that the consent of others strongly confirms our own belief; and the support of the expert, the specialist, the initiated, the illuminated, and the inspired is particularly comforting. Most people are incapable of believing except in a crowd, and those who can be happy alone upon the bleak mountains of speculation are rare indeed. Still, even if the universality of beliefs could be established, it would only be conditional evidence of their objective truth. Granting that such beliefs must rest upon a correlatively wide and lasting experience, yet we have seen that the value of any experience depends upon whether it gives a fair sample of

Nature; if it does, the quantity of it is unimportant; if it does not, no amount of it is conclusive. Now many things that are universal in the experience of men may, nevertheless, be peculiar to human nature or to its circumstances on this earth, and so give occasion to Idols of the Tribe. This is notorious. Or, again, granting that universal beliefs must be useful, it will remain to inquire how utility is to be estimated, and whether we are prepared to maintain that it is never well to be deceived, and that the usefulness of a belief is a proof of its objective truth. In short, the alleged universality of a belief, far from proving its validity, makes it an interesting object of history, analysis, and interpretation.

As for the doctrine of innate ideas or principles, which is historically connected with that of *notiones communes*, it seems not to have been urged by any one that innateness is an ultimate criterion of truth, since reasons are given for believing such or such ideas to be innate: as that they are common to all men; that they are clearest in children; that they become manifest (like gout) in the maturity of life; that with furniture so useful God must have endowed us; that, like Descartes's idea of perfection, they are too good for a poor man to have invented; or that we cannot imagine how else they came to us, and that acceptance of traditionary phrases is more comfortable than suspension of judgment.

The Kantian modification of this doctrine, speaking of *a priori* forms of intuition and understanding, instead of innate ideas, explicitly infers the activity of such forms from the given fact that there are true sciences of Mathematics and Physics. But this separation of the form from the content of Science, whilst it is admitted that neither of them can ever be separately known, is the same idle whim as the belief in Laws of Nature as having some sort of existence apart from the order of events. The laws of Reason are an abstraction and generalisation of perceptions and reasonings.

The theory of mental evolution gives a new aspect to the doctrine of innate principles; but, instead of assigning them any origin other than experience, it ascribes them to heredity and selection; not suggesting that they are ultimate, but

assuming the uniformity of nature and an orderly world to which they were our ancestral adaptations; pointing as emphatically to the limitations as to the antiquity of experience, and therefore as favourable to scepticism as to science. Inherited dispositions to perceive or judge, though essential to experience and influential in speculation, do not dispense with analysis and verification, nor preclude the soothing reflection that one hour in a physical laboratory is more instructive than a thousand years of clambering in the Congo forest.

(*d*) The clearness and distinctness of cognition, insisted on under various conditions by Epicurus, Descartes, and Locke, certainly increases with advancing knowledge; and, no doubt, it is one criterion of truth. Clearness and distinctness of perception is instinctively held to be a test of Empirical Reality; and to increase the adequacy of perception we always endeavour to make it more and more clear and distinct. Conception, by its very nature, has these characteristics; for a concept is nothing but the complete determination of an abstract or general idea by methodical analysis; and, accordingly, it is expressed by a definition. Similarly with the more explicit acts of judgment concerning the relations of percepts or concepts; these, too, when they are really intellectual acts and not merely associations of custom, asseveration, or interest, are regarded as trustworthy in proportion as they are clear and distinct. Convinced by a demonstration of Euclid, a boy says that he clearly sees it; and this is what Locke and others mean by 'intuitive knowledge.' The intuition of equality—the masterform of understanding—is the most clear and distinct of all.

Still, whilst clearness and distinctness are characteristics of truth, they do not seem to be peculiar to it; and, if not, they do not afford an adequate criterion: not, at least, if we take the percepts or concepts so marked, in the limited sense that would seem to have satisfied Epicurus and Descartes. For an hallucination may be very clear and distinct. My concept of a centaur is, I think, clear and distinct, and so is the judgment that Hercules slew Nessus. My reason for not

regarding such things as true is not their vagueness or obscurity, but a want of evidence that they cohere with the material conditions of experience, and assimilate with other concepts and judgments that have such coherence. The reports of ancient authorities concerning centaurs are deficient in the guarantees of observation, and are in conflict with the teachings of Comparative Anatomy, that is, with the analogy of experience; whilst they assimilate readily enough with other incredible things,—for the great world of The Incredible has its own laws and intuitions.

It may be objected that the concept of a centaur is not really clear and distinct; two chests, two stomachs with the appurtenances (it may be said), how is this conceivable? It is conceivable in the limited sense which seems to have sufficed when this criterion was relied upon. The real objection is, that such a conception is not what it ought to be, in view of the animal system; that no concept by itself can be adequate, because nothing in Nature is isolated. The meaning of a concept is always relative to other concepts in some scientific scheme, according to the character of the relations conceived. Hence the clearness and distinctness of a cognition *per se* is not a sufficient criterion: its relations must be considered and the analogy of experience consulted.

(*e*) To follow the analogy of experience, then, is certainly another characteristic of Truth, as Epicurus saw, though vaguely. It implies the uniformity of Nature and other concepts which cannot now be discussed without anticipating future chapters. If interpreted as including the '*ex nihilo nihil*,' it is an essential postulate of all reasoning and explanation; and hence some such meaning has generally been regarded as the valuable element in Leibniz's principle of Sufficient Reason; but whatever his meaning may have been, he has, in the spirit of the pre-Kantian Metaphysics, purposely expressed it in such a way as to carry the train or context of conditions beyond the bounds of experience. The same criterion is implied in the belief of Bacon and Descartes as to the value of crucial instances; for Logicians have shown that crucial instances derive their probative force from the

law of Causation, which is the chief clue to the analogy of experience. Accordingly, Kant says that that is necessary whose coherence with reality is determined according to universal conditions of experience, that is, as an effect of known causes; and Mill regards Causation as a principle fit to be the test of all others concerning changes in the phenomenal world, though not as a necessary truth.

§ 2. Whatever is true is necessary. Mill's detestation of this word 'necessary' probably arose from his observing how readily men use it to consecrate their prejudices, as a sort of taboo in defence of tradition, or as a brow-beating term to intimidate opponents. It may seem to check inquiry in all directions; or, at any present stage of inquiry, to claim too much for human certitude. Still, I suppose a principle may be necessary "humanly speaking"; and no doubt it is in this sense that Spencer regards those simple propositions of which the opposite is inconceivable as necessarily true. Now I have already observed that inconceivability, as distinguished from unimaginability, requires that the difficulty of conception should result from the definition or meaning of the terms; and those synthetic judgments are most clearly, distinctly, and confidently held that are guided and determined by the definitions or meanings of the terms; and in this it is implied that the terms themselves are clearly and distinctly conceived.

Such terms and such judgments belong to methodical systems of knowledge, of which the whole structure has been framed according to the analogies of experience. And those systems of knowledge, both as wholes and in their parts, will be most precisely conceivable (and their opposites most inconceivable) whose terms and relations admit of the most clear, distinct, and adequate definition. Such are Mathematics and Physics, and therefore they were rightly selected by Kant as the exemplars of necessary truth. In these sciences the terms are precisely defined, and the relation of judgment, Equality, is the most definite of all relations. Causation in Physics is not merely a qualitative relation, but is treated quantitatively as the redistribution of matter and energy; so

that the effect, so far as quantitative, being given in the cause and the cause in the effect, the doctrine of Hume (adopted inconsistently by Kant) that cause and effect are different things, and that one cannot be anticipated from the other, ceases in this quantitative aspect of them to be true; in other words, the conceivability of the causal relation is determined by the definition of the terms. For the same reason its negative is inconceivable, and the causal judgment becomes necessary.

If it be said that, according to this doctrine, necessity would seem to characterise any consistent body of judgments concerning clear and definite terms and relations, though it had no coherence with experience, I reply that necessity would characterise the internal relations of such a system, which would be a gigantic illustration of formal Logic; but that the construction of systems so extensive as the sciences, without the data of experience, surpasses human ingenuity. At least, no assurance that it can be done will content me unless accompanied by a fair sample of its accomplishment. Schemes that, like the Ptolemaic system, depart from the analogy of experience, even though they start from experience, break down; so do those that, like Rational Ontology, vaguely apply the analogies of experience to nothing that is verifiable. And, finally, even if such a system had an internal, relative, or hypothetical necessity, still, since (by hypothesis) it would not also cohere with Empirical Reality, the necessity attaching to it would not have that quality of belief which arises from connection with experience and practice.

But if the precise conception of relations (that is, judgment) and the inconceivability of the opposite, result from the determination of judgment by the definitions of the terms compared; and if the terms thus defined are found in methodical systems of knowledge constructed from the data, and according to the analogy, of experience; it follows that conceivability and inconceivability as tests of necessary truth, are only modes of appealing to the analogy of experience. And this agrees with Spencer's view that they result from an infinite inherited experience; and with his position in *First*

Principles (§ 40), that "there is no mode of establishing the validity of any belief except that of showing its entire congruity with other beliefs."

Apparently, then, a comparison of the doctrines of all the philosophers (not being sceptics) who have investigated the criterion of Truth, shows that they agree in regarding it as—clear and distinct conceptions and judgments cohering with Reality and harmonising amongst themselves according to the analogy of experience.

§ 3. To return to the nature of scientific necessity: it is not, I take it, a quality of pure cognition (of course, there is no such thing as pure cognition), but a mode of feeling that accompanies clear intuitions, and is in some respects similar to the feeling that accompanies other cognitions and beliefs of very different kinds. When a "necessary belief" is in question, it is not the fact of necessity but the feeling of it that has to be explained; knowledge of the fact, so far as attainable, depends upon systematic verification, and upon the exemplary character of our experience. For example, a man may feel the necessary truth of Euclid's 47th Proposition, and he may also feel that the omission of some ceremonial observance is necessarily connected with retributory misfortune. But the causes of the feeling in these two cases are very different; and the feeling, like every effect, differs according to the nature of its causes. Every one may consult his own consciousness for the difference between the necessity of demonstration and the necessity of prejudice. The latter seems to be sufficiently explained as a case of what Mill calls 'inseparable association.' Suppose that a man has been told often, and in awful circumstances, that omission will be punished; that he has conformed from childhood under fear of punishment, and has known occurrences which he interpreted as verifications of the fear (overlooking 'negative instances'); that the belief coheres with the whole system of his religious life, and has the consent of all his friends and neighbours; so that it has become impossible for him to think of breaking his custom without having a terrifying premonition of supernatural vengeance. No one will contend that a feeling of necessity thus generated

is any guarantee of a corresponding reality of connection between the terms of the belief.

But our sense of the necessity of Euclid's 47th Proposition has quite another origin. It depends upon the clear concatenation of the argument, which the inward eye seems to follow from premises to conclusion through the definite relations of equality. The effect is similar to that of looking around the room and seeing the position of the walls and furniture, the cognition of which is necessary. To be sure, the inward rarely has the distinctness and steadiness of the bodily eye; but in geometrical reasoning this defect is corrected by the definitions, which call back and illumine the mind's eye whenever it wanders and grows dim; and by resort to perception or imagination in constructed figures, by which it is plain that any appreciable departure from the hypothesis there (say, an ill-drawn right angle) involves a corresponding incongruity with the conclusion.

Hence it was that, so early in the history of philosophy, the mere rudiments of Mathematics could suggest to Plato's susceptibility the exalted conception of science as necessary and universal truth; and hence his anxiety in the *Republic* to reduce science to its pure mathematical elements, treating of Acoustics without sounds and Astronomy without stars; the sensuous element of knowledge being intractable by the same methods. Plato's conception of science descended to Kant: that science consists of synthetic propositions universal and necessary, is one of the main foundations of the *Critique of Pure Reason* (the other is, that perception is the test of Reality); and the scope of science is still regarded by him as limited to Mathematics and mathematical Physics. The success of his speculations upon this basis was astonishing, and remains instructive in spite of his archaic Psychology. And the soundness of his foundations may be judged by the comparative failure of his attempt to derive the theory of conduct, in a similar way, from the concept of Duty as a command of Reason requiring unconditional obedience; for conduct belongs to a region in which the appropriate concepts and their relations are not yet sufficiently determinate for

necessary reasoning. The same characteristics of precision and continuity that charmed Plato continue to captivate the scientific mind: whence the unceasing effort to extend and universalise the quantitative and mechanical way of conceiving Nature; and the tendency to regard the conceptual Physical World as more necessarily true and more real than the fulness of Empirical Reality.

I do not contend that association has nothing to do with the sense of scientific necessity. Whatever judgment is taken up into a system of judgments already held with conviction, will be suffused with the same feeling. And any method that has been pursued with good results in one department of research, will retain a certain prestige when carried into another. Reasonings about a fourth dimension of space may acquire plausibility from this influence. Even when the transference of method is superficially formal and quite illusory, this effect of quasi-necessity may be produced, as in Spinoza's *Ethics*: where the simulation of mathematical method is entirely external; since the judgments throughout are as often concerned with co-existence and succession as with quantity; and the many excellent results obtained are due not at all to the method but to native insight and induction. This fact is but slightly obscured by giving the name of 'axiom' or 'postulate' to observations and inductions: as in the remarkable passage between Propositions 13 and 14, in Part II.

§ 4. But besides the definiteness of conception and relation that characterises the exact sciences, there is another condition of the sense of necessary cognition which they share with other departments of knowledge; and that is the interest of consistency. If we have the luck to form a true judgment we adhere to it for our own sakes; in intercourse with others we are bound to use words in their accepted meanings and relations; and, indeed, such is the charm of consistency that even if we fall into an error, there is a strong temptation to make everything else square with it. Bain says: "It is a fundamental requisite of reasoning, as well as of communication by speech, that what is affirmed in one form of words

shall be affirmed in another." If we say 'matter is heavy,' we must admit that it 'gravitates,' and so forth. "To these self-consistent, though variously worded, affirmations is applied the description Necessary Truth. A more exact designation would be an *equivalent, implicated,* or *self-consistent* assertion" (*Logic,* Introd. § 21). To this kind of necessary truth belongs every verbal or analytic proposition, in which the predicate is part of the definition of the subject, and of which, as Kant says, the principle of Contradiction (in his version of it) is the universal and sufficient regulative. The doctrine of Conversion and Obversion in Logic is an outgrowth of this demand for consistency, and an attempt to determine the formal conditions of it.

The logical doctrine of the Syllogism is also a scheme of consistent statement, with one further condition, namely, that its axiom be true; and this, whether expressed as the *Dictum* or *Nota Notae,* is an example of distinct precise judgment guided and determined by definite concepts—'middle term' or 'mark.' It is characteristic of the Syllogism that the conclusion is true if the premises are; and Mill, extending this characteristic to the deductive sciences in general, says: "When it is affirmed that the conclusions of geometry (for example) are necessary truths, the necessity consists in reality only in this, that they correctly follow from the suppositions from which they are deduced" (*Logic,* ii. 5, § 1): that is, from the axioms and from the hypothesis that things exist corresponding to the definitions, line, circle, and so on (which is not quite true). Thus, so far as Mill will recognise necessity at all in our cognitions, he identifies it with consistency. Now the ground of the consistency of judgment and of the necessity of it is that consistency or uniformity of Nature which, found in fragments or divined in Empirical Reality, is carried out into Physical Reality and verified.

If, then, we suppose the whole of possible Knowledge and Belief to have been organised into Sciences, and all sciences to have attained the precision and coherence of Physics (especially if they should have become branches of Physics), this body of knowledge, starting from Empirical Reality,

coherent and harmonious in all its judgments and verified in Empirical Reality, would constitute Positive Philosophy and would be felt to be necessary truth. It would be our nearest approach to realising Leibniz's conception of the system of the world as in the Divine Mind eternally extant. The derivative laws of such a system would be necessary in the sense that they could not be denied without denying the Axioms and Causation. Nor could the Axioms and Causation be denied without denying all their consequences: for although it is generally good logic that the denial of an antecedent does not sublate the consequent, yet in this case it does, because the Axioms and Causation are the sole logical conditions of the derivative laws, and indeed for human knowledge they have no separate existence. The whole system would also have the guarantee of Empirical Reality, from which its concepts are shaped and in analogy with which its judgments are determined; so far at least as it succeeded in supplementing the inadequacy of perceptions: but I cannot say that it would attain to equal necessity. For, again, it is vain to apply the logical maxim that the denial of the consequent sublates the antecedent, since there is no hypothesis about Empirical Reality: it existed before any conceptual system, has survived the failure of many, and may see the passing of many more.

How the precision and consistency of science, the great system of definitions and equations, produce the sense of necessity in a good mind, may be seen in the confessions of the growth of conviction which Whewell somewhat naïvely makes, and which are quoted against his own *a priori* theory of necessary truth by Mill (*Logic*, ii. 5, § 6): "Though the discovery of the first law of motion was made, historically speaking, by means of experiment, we have now attained a point of view in which we see that it might have been certainly known to be true independently of experience." And again: "That they (the laws of chemical composition) could never have been clearly understood, and therefore never firmly established, without laborious and exact researches, is certain; but yet we may venture to say, that being once known, they possess an evidence beyond that of mere experiment. For

how, in fact, can we conceive combinations otherwise than as definite in kind and quality?" Thus, even beyond the sphere of Physics, in Chemistry, where the processes cannot be followed with the same intuitive precision, the influence of systematic treatment, the analogy of the concepts of uniformity and equality to those of the mathematical sciences and, generally, what may be called the scientific way of thinking (and not, I think, merely, as Mill says, habitual association), produce the effect which (as above suggested) is to be expected, in such circumstances. And I hope the view here set forth of the nature of necessary intuition may reconcile the historical schools of disputants represented by Whewell and Mill; since it shows that whilst sense-perception is the test of Reality and the starting-point of the conceptual process, it is only the test of truth when working in alliance with the intuitive imagination and the scientific understanding.

§ 5. But it may naturally be objected that such a state of scientific development as I have described is very far from having been reached: the system of Positive Philosophy contemplated is only an ideal. How then can it be used as a criterion of truth? Besides, if such a system were complete, a criterion would no longer be needed. But although the system does not yet exist, and if it did would be needless as a criterion, the method and the character of the system are sufficiently known to serve our purpose. It must start from, and return to, Empirical Reality; its judgments must consist of definite concepts definitely related; the things and processes supposed to obtain beyond the region of sense-perception must be intuited on the analogy of those within this region; judgments (or laws) concerning these things and processes must harmonise with one another, and conspire to form one system under the presiding schemata of the axioms and causation. Surely, these conditions admit of being applied to any judgment, law, or hypothesis that is called in question, due allowance being made for the different stages of progress that have been reached in different departments of study. In each study there is possible, at any given time, a certain degree of definiteness of conception and intuition and a certain quality

of systematic co-ordination; and (as you may have heard) a good mind with the appropriate culture knows what it is. But in every study, in proportion as definiteness of conception, rigour of verification, or systematic co-ordination is wanting, in that proportion a good mind does not experience necessary conviction.

Indeed, is not this the criterion actually employed at present, so far as method is understood or instinctively apprehended? Suppose that a great outburst of scientific genius should astonish the world; that men should arise in every department of inquiry with power to revolutionise it, discovering more commanding generalisations than the Atomic Theory, the Undulatory Theory, Gravitation, the Laws of Motion, and more certain principles than the Axioms and Causation: how could they make good their claims, except by greater definiteness of conception, greater strictness of verification, and more systematic co-ordination of results?

It may be some confirmation of this view of the criterion to observe that definiteness, verification, and co-ordination are the differentiæ of Science and Philosophy in contrast with popular Knowledge; that each Science as it grows, strengthens and comforts itself (as Bacon might say) by the increase of these characters; and that such progress is the instinct of the scientific mind and the aim of every philosopher: except some Sceptics.

CHAPTER V

SCEPTICISM

§ 1. The chief dissensions between schools of Philosophy seem to begin with their sense of the modality of Knowledge—whether apodeictic, or assertory, or problematic. There are thinkers, such as Kant, who maintain that some cognitions, mathematical, physical, moral, are necessary. Others, such as Mill, regard our knowledge as at most assertory; we may, they say, hold with entire confidence an extensive array of propositions as true, according to our powers of discovering truth; but to treat them as absolutely true of the Universe, or as if the objective correspondence could not have been otherwise, is to go beyond our warranty. But besides these schools there are the Sceptics, the mildest of whom will not admit that knowledge can be better than problematic.

It might seem, if we considered only this sense of the modality of knowledge, that the problematic philosophers must be more opposed to both the assertory and the apodeictic, than these to one another. Yet I think it will be admitted that, historically, the closest sympathy upon general grounds has existed between the problematic and assertory schools; or, let us say, since it comes to much the same thing, between the Sceptics and Empiricists. But this grouping cannot last much longer; for the difference between apodeictic and assertory philosophers tends to disappear. I, at least, cannot understand how any Empiricist can deny that whatever is true is necessary, and that certain intuitions are both seen to be true and felt to be necessary,—whatever the value of such feeling. On the other hand, the claim to know by intuition

the universal necessity in Nature of certain truths, is palpably inconsistent on the part of Transcendentalists who accept the argument of Leibniz; for intuitions are only particular experiments in knowledge, and therefore can never give necessity to a general judgment. It is indeed a contradiction in terms to claim for *pure* cognition a quality that is essentially feeling. As for the tenet that mental conditions *a priori* are implied in what we take to be universal and necessary knowledge, it must be abandoned by any one who accepts (as I do) the biological theory of the growth of the mind: and the attempt to save it by limiting the conditions of cognition *a priori* to the activity of the Subject is vain; seeing that the activity of the conscious organism is, of course, a doctrine of the physiologists. Hence the spiritualistic interest of the apodeictic character of knowledge is lost; the issues involved in it cannot be discussed merely on speculative grounds.

Should we then expect that the apodeictic and assertory schools of philosophy will coalesce, recognising that all truth is necessary, but that whether any general proposition is true, depends upon whether human experience comprises a fair sample of the Universe; or is it more likely that many minds, that in former times would have embraced the apodeictic view of truth, will henceforth incline, at least in physical speculations, to the problematic, and enforce the doctrine and discipline of Scepticism? As to this, one cannot read anything more instructive than the candid chapter that brings to a close Jevons's work on the *Principles of Science.*

It is remarkable that in spite of the conflict of dogmas in Greece, Scepticism was, until the end of the fourth century, only sporadic there. Speculative contradiction alone was not enough to give it continuous vitality: it was social and political decay, the loss of the City's sovranty and the citizen's dignity, responsibility and incentive, that infected Philosophy with the taint of vanity and failure, and gave occasion to the parasitic sect that fed upon the corruption of systems.

Sceptics, however, may be divided into two groups: (1) the Academics, who, like Carneades and Hume, admit that we have at least probable knowledge, and for whom therefore

the modality of truth is problematic; and (2) the Pyrrhonists, who dispute the possibility of any knowledge whatever,—intellectual Nihilists, undertaking to show that any proposition and its contradictory may be supported by evidence equally strong, that is to say, equally weak; for whom, therefore, truth is not so much problematic as antilogistic.

To begin chronologically with the latter doctrine: the ten Pyrrhonic tropes (supposed to have been listed by Ænesidemus) are given in every history of Philosophy. On reviewing them, it is easily seen that they are all reducible to two heads, the relativity of perception and the inconsistency of opinions. The doctrine of Relativity, as affecting the modality of knowledge, I purpose to examine in the next chapter. As to the inconsistency of opinions, to make that the test of untruth implies the admission that a test of truth is consistency, or the systematic harmony of knowledge, if it be attainable. The refutation of this sceptical animadversion, therefore, must be left to posterity; let them construct, if they can, the Positive Philosophy.

I do not bring against the Sceptics the stale objection, that the denial of all certainty involves the denial of their own position, that if they cannot be sure of anything they cannot be sure even of that; for these men, being not altogether dull, at least no duller than their critics, seem to have anticipated this tolerably obvious reflection, and to have explained that they only balanced one argument against another, so that judgment remained in suspense between them; that they employed even the forms of deductive reasoning as a concession to opponents who would argue in that way; in short, that they threw upon the rest of the world the onus of proving something.

Much less do I regard the Sceptics as legitimate objects of moral reprobation. Their characters range through all gradations of frivolity and earnestness. A man may hold that to believe anything is in bad taste, at least, for a cultivated mind; or that if anything can be proved, very inconvenient tenets may get a foothold; or that if nothing can be proved, belief becomes a matter of choice, and then one's own

prejudices may get the most votes; or that by recognising any success in the attainment of truth, we limit the field of research. In fact, Scepticism seems to be a necessary apparition whenever, in the movement of social life, traditionary formulæ become obsolescent, whilst the new-fangled are still inadequate. If such be the actual state of affairs, to comprehend and illustrate it, to express what many feel, to define what many surmise, may be a useful social function; and the man who discharges that function effectually is, for the most part, such a Euphues that to live the ordinary life of honour and integrity comes easy to him without the support of priest or scholarch. Moreover, the sceptical and the mystical evaluations of this world's good and evil lead to much the same result; so that the Ilissus may flow into the Ganges.

It seems to be agreed that in the present age of the world, Scepticism of some sort is a good thing; that it is a necessary condition of all prudent investigation; that our opponents have much too little of it in regard to their own demonstrations; that generally (as Mill urges) Truth lives only whilst she is militant, so that even our own doctrines may be the better for candid strictures. In the fulness of time it may be possible to hold beliefs with intelligence as well as conviction, though never called upon to defend them; that is to say, when man shall be a rational animal. That time is not yet; and meanwhile the reproach of 'scepticism' is an appeal to lewd fellows of the baser sort—

> Almighty crowd! thou settlest all dispute;
> Power is thy essence, wit thy attribute.

Hitherto, the crowd having been on the side of tradition, scepticism has been a reproach to those who doubted of tradition: ere long it may with equal vulgarity be cast at those who doubt of science.

§ 2. The scepticism of Carneades seems to have turned at first upon his theory of knowledge: distinguishing between the Subject of cognition, its representation of the object, and the object itself, he argued that, granting the confidence of

the Subject in its representation, it yet can know nothing of the correspondence of that representation with the object, and therefore can have no knowledge of the truth. It was very natural for this difficulty to arise among the successors of Plato. If dialectic failed to discover the Ideas, supposed to be the only real objects of knowledge, mankind were imprisoned in the region of the senses and therefore of mere opinion: the senses were discredited by hypothesis, and Reason by defeat. Ever since that time, upon this or on closely related grounds, —in connection, that is, with the notion of Substance or of the Thing-by-itself,—the same difficulty has embarrassed Philosophy; and hereafter we shall have to consider whether, or under what conditions, it is insuperable. Meanwhile we may note that, according to Carneades, the Subject may entertain belief in its own representations, that is, in the world of perception, or Empirical Reality.

Another ground of his scepticism was, that no test of truth can be satisfactory, because we may always ask why it should be trusted. This is the alleged *regressus ad infinitum* of all proofs, which is inevitably suggested by the syllogistic method: granting that the premises prove the conclusion, how are the premises proved? Aristotle had foreseen this question, and required that, for necessary reasoning, the middle term should express the cause of the major. But his theory of causes was one of the weakest points of his system; and he appears to have wavered as to the best way of determining the cause, sometimes appealing to Induction, sometimes to a faculty of Reason. The latter device was ill calculated to check a determined Sceptic; the arbitrariness of all principles assumed upon that ground being urged again and again. The former device was unsatisfactory because of Aristotle's imperfect apprehension of what induction requires. Whatever Carneades may have had to say upon induction, the objection is attributed to Agrippa (a much later sceptic) that the major premise of the syllogism must at last be proved by a complete collection of all the instances, and that this must include those which form the subject of the conclusion; so that a *circulus in demonstrando* inevitably results from the attempt

to base syllogism on induction. Mill's reply to this argument has been given in Chapter III. § 7: belated nearly 2000 years.

Carneades' criticism, then, of any possible test of truth, such as that of the Stoics or Epicureans, that seeks to set up one principle as a test of all others, was at least very plausible. Accordingly, in discussing the criterion in the last chapter, I avoided the dogmatic position of resting upon one only principle, and sought to combine the view of common sense, the general agreement of philosophers and the method and aim of the exact and progressive sciences; and to this doctrine I must claim the assent of Carneades himself, upon the strength of his theory of Probability.

For we have seen that, whilst holding a knowledge of objects to be impossible, he recognised that our representations of them excite belief; they may have verisimilitude, and such cognition may be called probable. Of probability he distinguished three stages: (1) the lowest degree belongs to a single, emphatic, persuasive cognition; (2) our confidence increases when, on comparing a probable cognition with others that are concatenated with it, it remains undetachable or uncontradicted; and (3) the highest degree of probability is attained when all these cognitions are emphatic, consistent, and methodically confirmed (Sextus Empiricus, *Adv. Math.* vii. 166: quoted by Ritter and Preller). Plainly, ἔμφασις is the sceptical equivalent of κατάληψις; and the meaning of concatenation and of methodical confirmation will vary with the development of scientific culture.

Now to call such knowledge only probable implies that some other knowledge of greater certainty is possible or conceivable. If so, will not some one say what it is? It is not enough to offer a negative concept of some knowledge, defined merely as without the imperfections of our own. One may suppose a vision of all things at a glance, as I see the landscape yonder; but this acknowledges that I do see the landscape: or a knowledge of all things such as we have of the axiom of mediate equality; but this grants the truth of the axiom. If a knowledge be demanded that shall never be liable to such change and supersession as have overtaken so

many supposed sciences; I say that Empirical Reality has never been discredited, nor have the axioms, nor yet the method of intuitive and harmonious construction and verification. In short, our standard of certainty must lie within our knowledge; and, therefore, there is nothing outside of our knowledge wherewith to disparage the whole of it under the name of probability. We have in the Platonism from which Carneades glissaded one of the impossible ideals that have done so much now to elevate and now to vex mankind.

Apparently the scepticism of the New Academy was academic in the modern sense of the word, a refined amusement, which bore about the same relation to Philosophy as Italian fencing does to the art of war. Still, in its own day, it seems to me to have been superior, even as Philosophy, both to the fanatical dogmatism of the Stoics and to the gaseous hypotheses of the Epicureans; and the accomplished and adroit figure of Carneades warns one of the vanity of hoping to pose and dumbfound him. I hear him say: 'Ich bin mir selbst auch in der Hölle noch gleich.' But, alas! poor ghost, so may many another say who yet is every day triumphantly refuted. Striking tableaux in the underworld, when from time to time a new colonist arrives, have been imagined. Let us figure to ourselves Green descending (against his proper motion) with the edition of Hume under his arm, and envisaging the author: whom now I see approaching; for his turn has come.

§ 3. Yet, in fact, Hume's liability to be classed amongst Sceptics is not so clear as common repute would lead us to suppose. For, in the first place, he is in many directions a constructive thinker. To Psychology, Ethics, Æsthetics, Inductive Logic, Economics, Politics, Philosophy of History and Religion, his contributions are numerous and important. It would be a useful and edifying task to collect and display them, and thereby correct the injustice of histories of Philosophy, which exhibit under his name nothing but bare bones of the criticism of Cause and Substance. Few philosophers, if any, have done more for the positive instruction, as well as for the enlightenment, of the human mind.

Secondly, if we take the most deliberate statements of his

opinions, it will appear that as to the Natural Sciences he was not sceptical at all. Thus in the *Treatise* (III. § 11) he writes: "Those philosophers who have divided human reason into *Knowledge and Probability*, and have defined the first to be *that evidence which arises from the comparison of ideas*, are obliged to comprehend all our arguments from causes or effects under the general term of probability. But though every one be free to use his terms in what sense he pleases; and accordingly in the precedent part of this discourse, I have followed this method of expression; 'tis however certain that in common discourse we readily affirm, that many arguments from causation exceed probability, and may be received as a superior kind of evidence . . . 'twould be more convenient in order at once to preserve the common signification of words, and mark the several degrees of evidence, to distinguish human reason into three kinds, viz.: *that from knowledge, from proofs, and from probabilities.* By knowledge, I mean the assurance arising from the comparison of ideas. By proofs, those arguments which are derived from the relation of cause and effect, and which are entirely free from doubt and uncertainty. By probability, that evidence which is still attended with uncertainty." According to this passage, then, laws of causation are assertory; and the same view is required by his doctrine of Chance: "Though there be no such thing as chance in the world; our ignorance of the real cause of any event has the same influence on the understanding etc." (*Inquiry*, § 6); and by his notorious criticism of miracles in the *Inquiry* (§ 10): "A miracle is a violation of the laws of nature; and as a firm and unalterable experience has established these laws, the proof against a miracle, from the very nature of the fact, is as entire as any argument from experience can possibly be imagined." As to knowledge "from the comparison of ideas," it includes "Geometry, Algebra, and Arithmetic; and in short every affirmation which is either intuitively or demonstratively certain" (*Inquiry*, § 4). Though, I believe, he nowhere says it in so many words, his statements imply that he regarded pure Mathematics as consisting of analytic propositions, and necessarily true because capable of being tested by the

principle of Contradiction. For thus he contrasts such knowledge with matter of fact, the contrary of which can never imply a contradiction: "*That the sun will not rise to-morrow* is no less intelligible a proposition, and implies no more contradiction, than the affirmation *that it will rise.* We should in vain, therefore, attempt to demonstrate its falsehood. Were it demonstratively false, it would imply a contradiction, and could never be distinctly conceived by the mind." Hume's view of Mathematics is, of course, inadequate: but we are now only concerned to observe that, although he treats the application of Geometry to matter of fact as hampered by the impossibility of exact measurements, yet he regards Pure Mathematics as necessary, laws of Causation as assertory, and propositions of less certainty as problematic. In what, then, does Hume's Scepticism consist?

§ 4. In the first place, Hume doubts, or rather denies, the supremacy of Reason: for (1) our reasonings are not based upon Reason but upon Custom and sentiment and imagination. Now it was recognised by Aristotle that reasonings cannot always be derived from antecedent reasonings, but must have their beginnings in something else. But since it seems derogatory to Reason that it should begin from anything called by another name and, therefore, supposed to be of lower rank; philosophers distinguish between Intuitive Reason that gives principles, and Discursive Reason that draws conclusions. Well, in his theory of Causation, Hume for 'Intuitive Reason' substitutes 'Custom'; and this is the chief incitement to call him a Sceptic. But (2) he tries to show (and with no little glee) that reasoning everywhere needs the guidance of custom, on peril of ranging through useless subtleties to fantastic and incredible results. Such he thinks is the fate of the mathematician, speculating about infinitesimals; and of the metaphysician, attributing reality to a world other than that world of sense-perception which the ordinary man takes to be real. (3) Every decision concerning the validity of reasoning rests with sentiment. "All probably reasoning [which here includes causation] is nothing but a species of sensation. 'Tis not solely in poetry and music, we must follow our taste and

sentiment, but likewise in philosophy. When I am convinced of any principle, 'tis only an idea which strikes more strongly upon me. When I give the preference to one set of arguments above another, I do nothing but decide from my feeling concerning the superiority of their influence" (*Treatise*, III. § 8). Must not this have been painful reading to any Clerk—

That unto logik hadde long i-go?

Can we wonder if he clung to νοῦς and ἐπιστημὴ as better words than 'custom' and 'sentiment'?

In the second place, his observation that we never know the soul *per se* but only its passing thoughts and feelings, must seem sceptical to those who rely upon such dogmatism as Berkeley's in proof of Spiritualism. It is, however, on the contrary, one of Hume's positive results, and is now on all hands accepted.

In the third place, of course, his attitude toward tradition is really sceptical: various points of Theology are the subject of frequent innuendo, and miracles and prophecy of direct attack. He might have urged, however, that it is questionable whether the term 'sceptic' is more properly applicable to one who believes in miracles and doubts of natural law, or to one who believes in natural law and doubts of miracles. The really clever thing is to believe both.

In the fourth place, a very easy-going and sceptical temperament is suggested by his style; which often leaves us in doubt whether its failings are due to carelessness or design. For instance, he says that "the ideas of the memory are much more lively and strong that those of the imagination," and are tied down to the order and form of the original impressions (*Treatise*, I. § 3). But this does not prevent him from saying that "the memory, senses, and understanding are all of them founded on imagination, or the vivacity of our ideas" (*Treatise*, IV. § 7); or from attributing to the influence of imagination that identity which the vulgar ascribe to objects during the intervals of perception (IV. § 2). Such passages illustrate the strain of meiosis, amounting to impropriety, that runs through nearly all his phraseology in describing the

operations of the understanding, and tends to sap our confidence in them. Take another instance of this: his account of the work of imagination as "a propension to unite these broken appearances (perceptions) by the fiction of a continued existence" (IV. § 2); and again, "the identity which we ascribe to the mind of man is only a fictitious one and of a like kind to that which we ascribe to vegetables and animal bodies" (IV. § 6): where by 'fiction' and 'fictitious' he means *construction* and *constructive*. But whilst it is true that every fiction is a construction, yet we do not call it a fiction unless we also regard it as false; and in neither case did Hume so regard it; so that his language is capricious and perverse. But the worst case of all, because it affects the foundations of his system, is the use of the term 'custom' in order to explain our belief in causation. For custom, in the usual sense, is itself a result of causation, a highly complex result depending on many causes, and therefore variable; and yet he makes it, by a violent extension of meaning, the ground of our belief in causation, though he certainly regarded causation as invariable and the basis of all synthetic reasoning. It is true that to find a just word for what he had to express is difficult: "association," "integration," "routine of experience," etc., are each and all open to exception; but surely Hume's ingenuity and power of language might have led him to something better than 'custom' had he strongly desired it: 'organic growth,' for example, would have agreed well with his comparison of the mind's identity to that of an animal body. But literary weakness, the love of effect, has been not unfairly attributed to Hume. He was an artist, and wrote as much for the joy of it as to convince his readers. To give a quasi-literary air to a scientific treatise, and for the sake of an impracticable purism, he risks obscurity rather than enlarge the philosophical vocabulary, and in avoiding neology falls into solecism.

In the fifth place, and as another instance of his love of effect, what he grants to natural belief he often takes away again on second thoughts, and leaves it doubtful whether he regards the first or second thoughts as the more, or the less, valid. In the *Treatise* (IV. § 4, *Of the Modern Philosophy*) he says that

"the fundamental principle of that philosophy is the opinion concerning colours, sounds, tastes, smells, heat, and cold; which it asserts to be nothing but impressions in the mind derived from impressions of external objects, and without any resemblance to the qualities of the objects. On examination I find only one of the reasons commonly produced for this opinion to be satisfactory, viz., that derived from the variations of these impressions, even while the external object, to all appearance (*sic*), continues the same." He then recites most of the ten sceptical tropes mentioned above, and says that "the conclusion drawn from them is as satisfactory as can possibly be imagined," namely, that primary qualities, "extension and solidity with their different mixtures and modifications, figure, motion, gravity, and cohesion," are "the only real ones of which we have any adequate notion." But presently he goes on: "I believe many objections might be made to this system: but at present I shall confine myself to one, which is in my opinion very decisive. I assert that instead of explaining the operations of external objects by its means, we utterly annihilate all those objects, and reduce ourselves to the opinions of the most extravagant scepticism concerning them." On examining motion, extension, and solidity, the only qualities left to the world by the modern philosophy, he finds that they all depend upon solidity which can only be known by "feeling" [touch]; but this does not resemble solidity; nor can it, because it is a simple impression, and solidity supposes the pressure of two bodies. "Thus there is a direct and total opposition between our reason and our senses; or, more properly speaking, betwixt those conclusions we form from cause and effect, and those that persuade us of the continued and independent existence of body." So, whilst pretending to repudiate scepticism, and leading the reader to expect a refutation of it, he concludes with an antilogy which is the essence of scepticism. Yet plainly in this *jeu d'esprit* he has a serious purpose: to illustrate the processes of the understanding, and to show that the dogmatic Philosophy, fairly worked out, ended in scepticism as "hideous" as his own.

§ 5. What then is really Hume's position with regard to

the modality of knowledge? It seems to me to lie somewhere between the problematic scepticism of Carneades and the assertory empiricism of Mill, but decidedly nearer to Mill. Scepticism was to some extent a disguise with Hume: in his ethical speculations there is very little of it. In Metaphysics he professes, or strongly suggests, adherence to the Academic Philosophy; but his reasons for this seem to have been as follows: (1) To indulge his literary humour. (2) To gratify a genuine impartiality of mind. He saw real difficulties in every theory of knowledge, and found suspense of judgment not disagreeable: a state of mind how superior to the eager, anxious bigotry of your forensic philosophaster. (3) He exposed the conflicting results of ratiocination in order to prove his main point, that the basis of knowledge is sensitive not cognitive. "My reasons then for displaying so carefully the arguments of that fantastic sect [the Pyrrhonists] is only to make the reader sensible of the truth of my hypothesis, *that all our reasonings concerning causes and effects are derived from nothing but custom; and that belief is more properly an act of the sensitive than of the cogitative part of our natures*" (*Treatise*, IV. § 1). (4) He desired to limit the field of human inquiry "to such subjects as are best adapted to the narrow capacity of human understanding" (*Inquiry*, § 12, Part III.); had in fact the same object as Locke and Kant. With what mixed feelings of glee and contempt does he now, among the shades, watch the changing fortunes of his scepticism in recent literature; whilst he glances over the books (if any have life enough to double themselves in Hades!) of those who enjoy the twofold pleasure of rating him as a sceptic and of using his arguments to excuse their own credulity.

It is easy to show that Hume recognises the main outlines of the criterion of truth set forth in our last chapter. (1) Empirical Reality is everywhere recognised by him as the starting-point, and as the constant guide of all effective thinking; it is the ground of that 'custom' of experience that generates the causal judgment. (2) The principle of Contradiction is recognised in his theory of Mathematics. (3) The method of discovery is to pass from "impressions" (elements of

Empirical Reality) by "natural relations" to conclusions, under the control of the canons of Induction given in the *Treatise* (III. § 15). But I do not find that he anywhere distinctly signalises the method of hypothesis and verification, though often employing it. (4) The verification implied in systematic agreement is appealed to; first, negatively, in the sceptical procedure of opposing sense to reason, or one philosophy to another, as a test of untruth; and, secondly, by positively claiming it as evidence on his own behalf: "What principally gives authority to this system is, beside the undoubted arguments upon which each part is founded, the agreement of these parts, and the necessity of one to explain another" (*Treatise*, III. § 13).

As for the Pyrrhonists, Hume often repudiates their doctrine upon characteristic grounds. Such people in fact never existed: "whoever has taken the pains to refute the cavils of this total scepticism has really disputed without an antagonist" (*Treatise*, IV. § 1); "the great subverter of *Pyrrhonism*, or the excessive principles of scepticism, is action, and employment, and the occupations of common life"; though "it may flourish and triumph in the schools" (*Inquiry*, §§ 12-13).

§ 6. Thus Hume puts forward Pragmatism as the natural remedy for Scepticism, and the opposition between the two is usually regarded as thorough-going; and such probably is the view of William James (*Psych.* c. 28) and of F. C. S. Schiller ("Axioms as Postulates," in *Personal Idealism*, ed. H. Sturt). Yet, in a sense, Pragmatism is a kind of Scepticism, as any doctrine must be that puts the conviction of Reason solely upon any ground other than cognition, whether it be action or feeling. But neither course involves Scepticism, unless action or feeling be made the test of truth to the exclusion of cognition: Hume, as we have seen, says that the preference of one set of arguments over another is a matter of feeling; but he does not say that this feeling of preference is not determined by the character of the arguments.

Psychologists have shown that every mental process involves cognition, feeling, conation; it may, therefore, be

viewed in any of these ways. A theorem of Euclid, a game of cricket, or a Turkish bath, is a complex of feeling, or conation, or cognition, as you may choose to consider it; but, when speaking generally (if we wish to avoid confusion), we must treat the first as cognition, the second as conation, and the third as feeling, according to the predominant interests of those experiences; or, when speaking precisely, we must show how every strand of the triple process is present in varying degrees in them all. Now, how is this applicable to the consciousness of truth in general?

Plainly, the consciousness of truth is primarily a matter of cognition, intuition, or synthetic attention. But this is a kind of conation; and its success or failure is attended by feelings of belief, hesitation, perplexity, disbelief. Still, the conation is to know, and its success or failure is a knowing or not knowing. Truth, therefore, is essentially cognitive; and its primary tests are cognitive, namely, clearness and agreement; which, in fact, are nothing else than successful knowing.

Since all experience involves action and reaction, it is possible to use 'activity' as equivalent to experience; but such exclusive emphasis creates a misleading abstraction. How important action is in connection with truth may be seen in this —that Empirical Reality is brought home to us in action, and that (biologically considered) only workable beliefs can survive. Such is Spencer's doctrine. But let us avoid expressions that may seem to imply that the survival of a belief merely connected with successful action, without clear and coherent cognitions concerning it, is a guarantee of its truth; for as a true conclusion may be drawn from false premises, so the same act (*πρᾶγμα*) may be done under very different and conflicting beliefs. If action is to verify belief otherwise than in universal experience, it cannot be by *post hoc, propter hoc,* but must be subject to the same conditions as other experimental proofs: we must show (1) that the action is really due to the belief it is alleged to prove, and not merely accompanied by it; (2) that no other belief could have had equally successful results; (3) that the belief agrees with all others that are held to be true. All this involves comparison, perhaps much subtle in-

terpretation, processes of understanding: in short, we must be enabled to see the connection. It cannot be right to adopt a belief merely on the ground of its apparent success, without taking any methodological precautions, and to urge it upon others—that good may come of it.

It is also necessary to inquire what is meant by successful action. How long a course of action is enough to establish its success? Within what limits are the consequences to be considered? To whom? These questions are serious, and difficult to answer.

Teleologically, Pragmatism seems to imply the entire relativity of knowledge to action; that action is the end, whilst intelligence exists merely for the sake of it, and has no rights of its own in the world. But it is not plain that organic activities, as such, are of any more worth than chemical activities, or that the Universe might not have been content to culminate in compounds with good long formulæ, without going on to develop highly conscious beings at such cost of pain and havoc. Schopenhauer thought that consciousness exists for the sake of organic life, but that this is part of the blunder of things; and that, accordingly, consciousness labours in error and illusion, until that consummation of knowledge which is the annihilation of Nature. But certainly much knowledge has been attained for which we have no use present or prospective, except the gratification of disinterested curiosity. And why may not disinterested curiosity be the noblest of desires, and the attainment of knowledge the only true success, the self-consciousness of the World: and therefore, to its humble organs the purest, the most enduring, the divinest satisfaction, and the only one that is never poisoned by regret?

As for the Pyrrhonists, they would never have submitted to a pragmatic refutation. Hume has slipped: they did not deny that the world is a practicable phenomenon, that the street seems to be a place to walk in, and that bread seems to appease hunger. The sect, however, has not revived in modern times, and may require special circumstances in the state of learning or of society to nourish its vitality. It is not that its criticism of prevailing tenets was, as Hegel says, more

profound or more thorough than modern scepticism: for all its positions have been (as we shall see) reinforced by recent reflection; but it was eminently Greek. Two generations earlier than Pyrrho, the Cynics and Cyrenaics had displayed with like extravagance a practical scepticism, rejecting all precepts and institutions as he did all opinions. These schisms sprang from the independence and self-sufficiency of the Greek intellect; for which even the innumerable ties of City-life were an inadequate restraint. They did not, indeed, illustrate the boasted principle of Measure: but was the general praise of that principle, affectionate or precautionary? No matter. If the men are extinct, their arguments survive them, and the chief of their arguments were derived from the Relativity of Knowledge.

CHAPTER VI

THE RELATIVITY OF KNOWLEDGE

§ 1. The phrase "relativity of Knowledge" is used to express the central idea of a number of doctrines to the effect that our cognition of objects is not direct, immediate, adequate, intimate, like the consciousness we have of our present thoughts and sensations, but is conditional (1) upon our place in the Universe; or (2) upon the media that intervene (like air or ether) between objects and our organs of sensation; or (3) upon the structure of our own bodies; or even upon the structure of our own minds: as having either (4) an elaborate formal apparatus *a priori*, such as Kant determined; or (5) some ultimate character, however simple, and a natural history —in both cases making it impossible that our perception or representation of the world can be direct or unconditional. A lover of technical terms might hereupon distinguish Cosmological, Physical, Biological, Metaphysical, and Psychological Relativity; but for me it is enough if the reader sees what I mean. Relativity in any of these ways being admitted, it is argued that there can be no knowledge worth the name, or that at least our knowledge must be liable to great and numerous errors and limitations.

Now there are here two positions: (1) that all cognition is relative or conditional, and this is a proposition in Psychology supported by other natural sciences; (2) that knowledge is therefore partial or invalid, and this is a metaphysical proposition. We are directly concerned only with the latter; but as it may be expedient to indicate plainly the grounds of the difficulty before attempting to overcome it, we shall begin with

a little fuller, though still brief account of the ways in which knowledge is said to be relative. In doing this nothing would be gained by adhering to the Pyrrhonic tropes; we shall, therefore, set out more recent considerations that have absorbed and superseded them.

If we suppose the Reality of Realities to be a Substance transcending all experience, the physical World of atoms and ether in space may be regarded as the first stage of its phenomenality, having only the qualities of resistance and extension, which are made known to a living organism by direct mechanical pressure and by muscular reaction and movement. Empirical Reality includes a secondary manifestation, in such qualities as sound and light, depending upon the intervention, between external things and the organism, of air and ether, the former producing mechanical, the latter chemical effects upon the corresponding sense-organs. Impressions of all kinds upon the organs of sense require a nervous system in which fibres conduct currents to certain central tracts (in the cortex), where alone consciousness is believed to arise. Consciousness, then, of what? Of change in the brain, or sense-organ, or physical World? What possibility that it should resemble transcendent Reality? It is entirely relative to physical and psychophysical conditions.

It is also relative to merely psychical conditions, the first of which, for all organic consciousness, is change. Any state of consciousness which we know as B could never have been known by itself, there must be a transition from A to B in order that we may be aware of anything. It follows that a first state of consciousness is inconceivable; but allowing for the lapse of inscrutable ages of growth, and assuming any starting-point, the next state is known in relation to it. B, therefore, is known in relation to A, and must be modified by this relation; similarly C in relation to B, or rather to B as modified by A. The series, therefore, is A, B_a, C_{ba}, D_{cba}, and so on to Z, that is to say, to the present moment. Present consciousness is determined by the history of consciousness; and each individual, having had a different personal history, must have a characteristic mode of cognition, a 'personal equation,' in all his thinking and

feeling. But the personal history of an individual is the least important part of his history: he is a mode of his species, the history of whose consciousness has again determined its forms: and the species is a mode of animal life; so that our present cognitions are determined by the history of consciousness, stretching back at least to the earliest organic beings.

This history of consciousness is another name for universal experience, or intercourse with Nature; which is also the condition of the development of organised bodies and of nervous systems. As consciousness grows and develops there also develop sense-organs, nervous connections, ganglionic centres, and specialised tracts of the cortex which are the organs of specific consciousness. The sense-organs are visible signs of the limitations of knowledge: if in any species (or individual) certain organs are wanting or feeble, wanting or feeble must be the corresponding cognitions.

The history of the sense-organs confirms the dependence of present cognition upon past experience. All sense-organs appear to be modifications of the skin. Assuming a primitive irritability of the skin with corresponding unspecialised sensation (unlike any sensation now recognisable, perhaps as much like Taste as Touch); that it was stimulated by pressure and by chemical disturbance, and that lines of transmission of these influences severally to central cells, and of consequent reaction and movements, were gradually established; that the epiperipheral pressure-nerves were again differentiated, in response to mass-contact and air-waves, into those of Touch and Hearing; whilst other pressure nerves, having become entoperipheral, began to serve as the organs of kinæsthetic and visceral Sensations (though the latter, or some of them, may be chemically stimulated); that the chemically excited nerves were differentiated into those that are influenced by material particles or effluvia in solution, giving rise to Taste and Smell,—and those that are influenced by ethereal and molecular vibrations, giving rise to sensations of Light and Heat; and that many of these underwent further and more refined specialisation: we have here a process similar to the differentiation of species of animals from a generalised type. Parallel with the differentia-

tion of sense-organs goes the discrimination of sense-qualities. Historically, then, every mode of sensation is relative to all the others, or may be regarded as existing by contrast with them; since, tracing the various modes of sensation back to their origin, all their differences merge and disappear in primitive unspecialised sensation.

The assumed unity of the psychological with the biological individual in existence and in development, leads to some obvious reflections. It is held that no animal has faculties incommensurate with its present or recent conditions of life: since such endowments would imply a waste of organisation and energy, which Natural Selection always tends to eliminate. Applying this doctrine to the mental powers, it may appear that cognition is relative to action, arises to enlighten action, exists for its utility, and that there can be no kind of cognition that does not subserve life. I say no kind of cognition, not that every specialisation of cognition, or every addition to knowledge, must be directly ancillary to action; so that if some branches of Mathematics, or if astral Chemistry, cannot be directly applied to useful purposes, this implies no conflict with the biological law; for such branches of science do not differ in kind from terrestrial Chemistry and Algebra, which are certainly useful. If, regarding science as existing to realise the World's self-consciousness, we were to suggest that all truths unutilisable by man subserve that purpose, it might be retorted that we do not know what is useful to man; that the movement of civilisation makes ever increasing demands upon the utmost refinements of speculation, and that an extensive store of potential or unorganised cortex, upon which original speculation depends, is the most general condition of adaptability and is, therefore, of the utmost utility to the human race or any branch of it.

Again, if there are in Nature any modes of energy such that the expense of organising a special nervous correspondence with them would not leave a balance of utility, so far no such nervous correspondence can have arisen in animal life; nor if, once organised, it ceased to be economical, could it maintain its activity in any order of animals; and this may explain

why (for example) there is in man no specific electrical sense, nor any sense (other than that of heat) correlated with the ether-rays that spread beyond the chromatic series at either end of the spectrum, whether such senses exist in other animals or not. De Morgan humorously supposes it "very likely that the universe may contain a few agencies—say half a million —about which no man knows anything." Besides those agencies which, like electricity, certainly affect the organism, yet have set up no specific correspondence with it, there may be others that for some reason cannot directly communicate with us from matter in mass,[1] and are also unable to communicate with us indirectly (like luminous bodies) for want of any appropriate medium of transmission. Modes of energy may exist in Nature which, within the region of our experience, are as rare as certain elements are: with such forces a nervous correspondence could hardly have been worth establishing, and so far our direct experience cannot be a complete sample of the universe. Moreover, the constitution of every sense-organ sets limits to the intensity of the stimuli that can be sensed; there is a minimum stimulus below which no sensation is excited, and a maximum above which there is no increase of sensation intensity. Ziehen suggests that this is due to Natural Selection; for an unlimited increase of sensation intensity would be too engrossing, and sensibility to the innumerable minute stimuli always assailing us would be too distracting. For similar reasons many modes of energy may remain entirely unsensed.

After these far-reaching considerations it seems unimportant to mention that all sensations vary with the constitutional state of the individual in health or disease, in youth or age. See the chapter on *The Relativity of Feelings* in Spencer's *Psychology* (Part II. chap. iii.). In the next chapter on *The Relativity of Relations*, he gives reasons for believing that the perception of space varies in different animals according as they have, or want, eyes; or have more or less perfect eyes; and according to the size of each species of animal and its powers of locomotion; and even in individuals of the same species according to their size, giants or dwarfs, because stature

is a standard of comparison. So with time, different species have different standards of comparison, according to the character of the subjective or objective sequences of event that are open to their observation. Alike in time and space, of equal magnitudes the more remote (other things equal) seems the less. Times of monotonous waiting seem long, because attention rests upon the time itself; times of bustle and excitement seem short, because time is neglected in the multiplicity of experience: but in retrospect the bustle seems long, because there is much to remember; the monotonous waiting, short, because it has left the imagination a blank. But more important than any of these is the simple relation of Difference; because, according to Spencer, it is from the cancelling and compounding of this that all other relations arise. "The relation of Difference, as present in consciousness, is nothing more than a change in consciousness. How, then, can it resemble, or be in any way akin to, its source beyond consciousness? Here are two colours which we call unlike. As they exist objectively the two colours are quite independent, there is nothing between them answering to the change that results in us from contemplating first one and then the other. Apart from our consciousness they are not linked as are the two feelings they produce in us. Their relation as we think it, being nothing else than a change of our state, cannot possibly be parallel to anything between them, when they have both remained unchanged" (§ 93). It is one of Ænesidemus's objections to the principle of causation, that it is a relative conception, exists therefore only in the mind, and can have no external existence. In short, not only modes of sensation, but the manner of their occurrence, their order and grouping and the quasi-blank forms or schemata of their occurrence, are determined by our own nature and by dispositions inherited from an indefinitely remote ancestry, whereby we conceive of things as like ourselves, not like the World.

§ 2. Since, then, it is generally admitted that Truth is relative in so many ways, both as to its matter and as to its form, to the species, the individual and the present conditions of each witness, we cannot wonder if many regard it

as unattainable, on the ground that we can never have any confidence in the correspondence of our judgments with their objects. To deal with this difficulty is the chief task of constructive Metaphysics; it will meet us in one shape or another throughout this book, and in the present chapter we can only begin the undertaking. First of all, it is necessary to be clear as to what the object is with which our judgment is required to correspond. In the passages of Spencer's *Psychology* above quoted from, he argues that our sensations are "produced by objective agencies that are unknown and unknowable," and that their relations cannot resemble, or be in any way akin to, their "sources beyond consciousness." And in Part VII. chap. xix. he explains, by his theory of Transfigured Realism, how a correspondence may be conceived to exist between consciousness and transcendent Reality, though nothing of the nature of the correspondence or of the Reality itself can ever be known.

Now no one can mistake Spencer for a sceptic; he bears no resemblance to Carneades; he certainly holds that truth is attainable and partly published: yet the position that human knowledge is at fault, because it does not and cannot comprise the truth of transcendent Reality, is essentially sceptical. The ancient Sceptics granted that we have persuasions concerning phenomena, probable knowledge; but taking advantage of the Dogmatist's belief in something more real (τὸ ὑποκείμενον of the Stoics, or the imperceptible atoms of the Epicureans), they urged that, except of that Reality, no knowledge can properly be called truth. They needed not to be so inconsistent as to believe in such Reality (and here Spencer differs from them); it was enough for their purpose to balance the inconsistent doctrines of their opponents: urging, for example, that the Causation which they recognised could not merely be a principle of phenomena, but if real must be true of Reality, of things imperceptible. That the belief in an unknowable 'substratum' furnishes a continual excuse for scepticism, is one reason for Berkeley's attack upon the notion of Matter; and for Kant's Dialectic of Pure Reason, which aims at the establishing of Physical

Science by excluding the transcendent Ideas from any constitutive part in science or in causation; and here, again, we may see how little Hume was a Sceptic, inasmuch as he first proved that causation is discoverable in phenomena only. Therefore, Spencer, in spite of his own professions to the contrary, must be understood throughout nearly all his works, not as engaged in interpreting the unknowable by the symbols of its transfiguration, but in endeavouring, more successfully than most inquirers, to complement the inadequacy and fragmentariness of Empirical Reality by constructing the conceptual system of Physical Reality. In this sense he has discovered enough truths to make the reputation of a dozen other men, truths which are not at all invalidated by most of the tropes of Relativity. These tropes may afford good grounds for disputing the pretensions of some philosophers to a knowledge of transcendent Reality; but give little, if any, excuse for denying the possibility of truth as the correspondence of our judgments with the world of possible experience.

For my own part, I am no enemy of the Ding an sich, nor one to glory in its incognoscibility, and therefore I am not pleased with the argument (noticed above) against the possibility of our knowing anything but phenomena, namely, that, granting the existence of transcendent Reality, still the indisputable facts of Physical and Biological Relativity, the interposition of media and nerve-fibres between the supposed Reality of things and our consciousness, must destroy any possible agreement between the first and last terms of the process. It may be said, for example, that the Reality represented by a resonant body cannot be like the vibration of that body; that this is not like the waves of air it sets agoing; that air-waves are not like a process in the aural nerve; nor is this like a sensation of sound: how then can such a sensation resemble the Reality at the other end of this series? But why not? If A is unlike B, B unlike C, C unlike D, why may not D be like A? The conclusion of the above argument may be true, but a worse argument I never met with. It is needless to ask how we know what

an air-wave or a nerve-current really is like: the genuine difficulty is that Likeness, a mode of consciousness, cannot be predicated between consciousness and the real World-process, because the World-process is assumed to be unconscious. But what if this is an error, what if the World-process has its own consciousness comparable with ours?

§ 3. However this may be, turning to the relativity of Empirical and Physical Truth, we must consider what extent of comprehension and what degree of certitude is reasonably to be expected: bearing in mind that the truth we have here in view is merely the truth for man; how short a time he has given to methodical investigation; that no one can suppose a complete system, without error or hiatus, to be near attainment, but that this is a task for the living and posterity, of which posterity must bear the greater burden: so that though many problems may be unsolved, the general method hitherto pursued and the results attained may be justified, if we are able to show that allied problems have been solved and that the kinds of error we are subject to are corrigible.

Since the question is whether the relativity of knowledge, as found in Empirical Reality, is an objection to the validity of science and an argument against the possibility of constructing the system of experience, let us first recall the account of Empirical Reality given in Chap. II. § 1: where we saw that for man it includes a considerable conceptual element, even for unsophisticated man inevitably, since without it the life of an adult is impossible. Now the development of the conceptual element of common experience is the means of correcting errors that are due to relativity, by discovering the cause and law of every error.

Some of the chief difficulties of Philosophy before the recent growth of Psychology, arose from assuming a separation between sense and understanding, the matter and form of thought. A desire to refine human life has led to errors of logic analogous to asceticism. The pride of reason, as of sanctity, demands something to despise. To this mood it is not repugnant that there should be in sense-experience a remnant of inexplicable chaos; and the supposed interests

of supernaturalism fall in with the malice of the sceptic. Availing themselves of the traditionary Animism, men have assumed the separability of body and soul as a "colour" easily acceptable, and have even represented the body as the temporary prison of the soul, restraining its activities and corrupting its powers in damp and darkness: so that to escape from sense-perception is necessary to the native sovranty of thought. But this is abdication, and leaves the senses lawless. According to Plato in *The Republic*, even the very stars (though in *The Timaeus* he makes them gods) are too coarse a kind of data to enter into a true Astronomy. There is a vestigial Animism in Aristotle's doctrine of active Reason: which is no part of the soul as the form of the body, but has a diviner source and destiny. The whole history of innate ideas illustrates the same well meant error; and so does Kant's difficulty in applying the pure categories of Understanding to the manifold of sensation: it assumes that sensation itself is not in the realm of law. But the solution of all such puzzles is, that in organised consciousness (which is necessarily our point of view) these elements of experience, sensation and understanding, the matter and form of thought, never exist separately, and are only discriminated by a "distinction of reason": that is to say, as sensation and understanding occur in very various proportions at different stages of animal and human life, and at different levels of each man's consciousness, they are certainly distinguishable; and by carrying out the series of varying proportions symbolically, we may suppose ourselves to conceive of "blind sensation" at one end and "pure thought" at the other, especially as we can phrase them. But "blind sensation" *on its own level* (not merely as subliminal to us) is a contradiction in terms: and the highest thought, if genuine, is the most sense-representative, as well as impure by its dependence on some word or sign: which word or sign is both itself sensuous, and derives its value, as representing that thought, from its profound and intricate sensuosity, from roots wide-ramifying in the detail of experience.

If, then, form or relation is immanent in the life of the

senses, the reality of perception is merely a subject of investigation. In human life the conceptual element even in Empirical Reality is extensive; the growth of knowledge during savage and barbarous ages continually extends it, and embodies in language the resulting classifications and judgments concerning things and their active properties; and, finally, in civilised life the methodical pursuit of science gives it still greater refinement and comprehension: and all this is nothing else than the surmounting of those objections to the validity of knowledge, which are drawn from the doctrine of relativity. The relativity of knowledge, as an argument for the invalidity of knowledge, is itself the result of an early stage of scientific culture; but its weight is diminished by every forward step of scientific discovery; and it is a reproach to understanding only as long as it is not understood.

Some old fashioned difficulties are so easily overcome, that it may seem needless to mention them. That a straight stick looks bent when plunged in the water, is explained by the laws of refraction. That the same object seems of different magnitudes according to its distance from the spectator, is explained by the laws of perspective. The error of judging an object warm or cold according to the temperature of our hand in touching it, is corrected by using a thermometer. If the old and the young, the sick and the hale have different sensations of weight in lifting the same mass, they come to agreement by using a pair of scales. Conflicting subjective estimates of time have an arbitrator in the clock and the system of chronology. To suppose that any of these differences of perception are in the nature of logical contradictories is only possible to a man to whom, as to poor Hegel, the principle of Contradiction is the insuperable *pons assinorum*. They are merely incentives to the discovery of laws: which would be impossible if they really were contradictory.

As to the doctrine that every sensation is so modified by its context (B by A, C by B, etc.) that none can have a character of its own, it has been badly overstated. Such modification is greatest where it is most useful, as in the comparison of temperatures. But with the progress of

organisation, all the most delicately discriminated and objectively significant sensations have attained a quasi-absolute character. Natural Selection must insure this, since nothing else would be compatible with their utility as signs, unless we suppose that there are really no special stimuli. The phenomena of complementary colours are not yet clearly understood, but nobody despairs of them. In these and in all similar cases we try to avoid the misleading influences of relativity by finding objective standards and general laws; that is to say, by extending the conceptual system that is immanent in Empirical Reality.

§ 4. The differentiation and fixation of sensations goes along with the development of sense-organs; and the existence of apparently different sense-organs, or organs of special structure (like insects' eyes), or at different stages of perfection, no doubt implies corresponding differences of experience in zoological species. Of course, if animals that possess the same senses as ourselves, have the eye, the nostril, tactile organs, etc., developed in much greater power and refinement than our own, still, in most cases the use of instruments and apparatus gives to civilised man an immeasurable superiority of apprehension. But some animals are supposed to have organs of sensation correlated with natural forces, with which we have no direct correspondence: a specific electrical sense is conceivable. Evidence has been found that ants and other insects are affected by the ultra-violet rays, and that, therefore, if the sensation of those rays is a colour different from all the others, all complex light effects into which it enters must also be unknown to us. Even if the octave of colour repeats itself, and ultra-violet is a higher value of red, still all its particular and blended effects must be unknown to us. Such reflections indicate the narrow range of sense-perception in any species, but do not invalidate its reports. Each sensation is what it is as sensation; and its truth as a sign depends not on its quality but on the uniformity of its connections.

De Morgan's opinion concerning unknown forces, that there may be 500,000 of them, has been quoted; and it is rash for a mere spectator of the physical sciences to surmise that if

there were 500 such forces as electricity, or 50, some evidence of their activity would by this time have been detected. If such forces exist, specific senses dealing with them may have been developed in animals off our line of ancestry; or even in our own line, though long lost and superseded by others more useful. On the hypothesis that every faculty is relative to its utility, it is intelligible that we should want those senses, if our present organs are economically the most efficient for guidance in life such as it has been. It is even possible that other organs would now be more useful, but that organisation long ago advanced too far to leave room for their initiation.

On the hypothesis that a purpose of Nature, in the development of animal and rational life, is self-knowledge, this purpose may seem to fail in man so far as he is a 'defective' in the powers of sense. But such a failure is very natural of Nature, and many things suggest that man may not be amongst her most successful variations. In Mars or some satellite of Sirius all possible organs may exist, the speculations of *Micromegas* may be far outdone; and it may be enough if such mere sensation-knowledge be attained somewhere. If animals on this planet really have senses correlated with unknown forces, the study of such species may enable us to learn something of the nature and laws of those forces, and to establish an indirect correspondence with them. Plainly, our knowledge of natural forces does not depend upon a direct sensing of them: the X rays and Electricity were not discovered in that way. Whatever force leaves a trace in our experience, whether directly or indirectly, may be pursued by the Physical Method. And as the classification of chemical elements has indicated the existence, and even some of the qualities, of elements not yet discovered; so possibly the study of known forces may reveal a scheme within which every possible force must find a place. In fact, the solar spectrum is part of such a scheme: a series, the various sections of which are gradually filled, as phenomena are discovered and interpreted with reference to them. But granting that our ignorance of the extent of Nature's powers may in some respects be incurable, still the question concerning the truth of our knowledge bears with far heavier

stress upon its validity, than upon its adequacy or comprehensiveness.

§ 5. Many objections, then, to the possibility of science which have been suggested by the character and conditions of the human mind, the progress of science has set aside; but it has brought forward others more serious. Some of these cling to the very methods of investigation; which, because of our mental limitations, are necessarily (*a*) abstract and (*b*) departmental. The human mind is unequal to the copiousness and complexity, as well as to the subtlety of Nature. Hence, despairing to deal directly with the fulness of Empirical Reality, it expends its energies chiefly upon quantitative problems; and finding the total object far exceed the grasp of one inquirer, resorts to the division of labour.

In pure science of quantity, the difficulties of actuality are avoided by substituting a supposed absolute Space, Time and Motion for the infinite variability of experience, neglecting whatever cannot be exactly calculated. But to avoid an enemy (it may be said), though justifiable strategy, is not to defeat him, and this one is entrenched behind the constitution of the World. For it has been discovered that all bodies in the World, masses and molecules alike, are in perpetual gyration and agitation, and in such reciprocal influence that the motion of each, as to velocity and direction, is always affected by the approach or recession of every other. It follows that no fixed points are known by relation to which direction in space can be determined; and that there is no uniform motion, and therefore no ultimate measure of time, so that the obtaining of exact quantitative data is even theoretically impossible. See the masterly working out of this subject in James Ward's *Naturalism and Agnosticism* (Part I.). To me such reflections are not exhilarating. Bain's remark, that "we may not see the world from a commanding point of view," is just but not consolatory. Though I began by declaring that the truth possible to man is all we can hope for, yet when another enforces and illustrates the same doctrine, it hurts: and this reminds me to apply Spinoza's observation, that "we should attend to that which

is good in everything, in order that we may be actuated by pleasurable feelings." It is more strengthening to reflect that, although scientific method is new, and although we inhabit a poor planet of a poor sun, perhaps in an obscure corner of the galaxy, yet we have discovered concerning the planet, solar system, and even the galaxy, a good deal about which there is in fact no doubt, in spite of any theoretical impossibility. The ground of this antilogy is, that the theoretical impossibility can be explained in few words and understood at a glance; whereas the scientific demonstrations (which it would be senseless to call 'practically' true) depend upon innumerable observations, calculations, corrections, ever accumulating and mutually confirmatory, the effect of which is indescribable. Hence the antiscientific argument has a great rhetorical advantage over the defence; although the experience which the defence can never fairly represent in words is entirely convincing, and although the attack depends entirely upon the truth of that experience.

It is another characteristic abstraction of the physical sciences to treat external Reality as constituted solely by the Primary Qualities of matter (resistance and extension), and to regard the Secondary (colour, sound, temperature, etc.) as in themselves subjective reactions, though excited by the Primary and objectified by association with them. The reasons for this abstraction seem to be that, in the first place, the Primary Qualities are the most strongly contrasted in experience with those feelings that are most subjective—pleasure, pain, and the cœnesthesis; and that, secondly, they are the most constant and unconditional in experience. For both our own bodies and all the things around us present them in all circumstances; whilst many things have neither sensible odour nor savour, may feel warm or cold according to conditions, and are colourless or coloured according to the supply of light. Illusions are chiefly of seeing or hearing, but to touch or grasp a thing is conviction. It next follows from the constancy of the Primary Qualities, that they are conceived to have the greatest coherence; so that the breaks that occur in our seeing or hearing of things (say, during the

night) are supposed to be filled up by a "permanent possibility" of touching them; and even our own existence during sleep is commonly so conceived, and all lacunæ of consciousness to be filled up with "cerebration." It is in their Primary Qualities, again, that things are most precisely measurable in dimension, weight, movement, and most uniform in their variation, and for these reasons most calculable. Hence in respect of the Primary Qualities the processes of Nature can be imaginatively intuited (by the hand, if not by the eye), when they cannot be actually observed, as a continuous transition; and this continuity of process, measurable and calculable, is a ground of the peculiar confidence felt in mathematical Physics. Finally, the supposed reduction of all other qualities to the Primary, or at least to a dependence on them, seems to gratify our instincts of explanation and simplification.

It is easily intelligible, then, that the sciences should regard the Primary Qualities as pre-eminently real, and should carry on in terms of them the whole conceptual extension of Empirical Reality. Yet it is, I suppose, generally admitted that (as Hume showed) the Primary Qualities are, as truly as the Secondary, grounded on sensations (namely the tactile and kinæsthetic), and that therefore, reflecting on the conditions of experience, they are (to use a Kantian expression) "transcendentally subjective." It cannot be denied that the Secondary Qualities are an essential element of Empirical Reality; indeed, by visual qualities we habitually think of all the rest. If then things are hard, why should they not be coloured and scented? If pressure and movement correspond in any way with transcendent Reality, why may not colour and odour correspond with it in some other way?

The immediacy of Empirical Reality makes it impossible that the Secondary Qualities should be 'explained away' and denied any place in the world. It is probable that in primitive organic consciousness the manifold of sensation is undeveloped; but somehow the progress of organic consciousness is certainly toward fuller knowledge; human and adult faculty is the truest. The very relativity of the Secondary Qualities, de-

termined by the process of organic differentiation, may point to some specific function of theirs in the representation of transcendent Reality. Natural Selection guarantees the growth of a more and more effective correspondence; and we ought to consider whether there are sufficient grounds for supposing that this growth of practical efficiency by the differentiation of sensation, is at the same time a growth of mental illusion. May not the equivalent of all that we perceive, and far more, exist in inorganic consciousness, I mean in the consciousness of what we call inorganic Nature? If such a view should, on the whole, give the greatest coherence to our conception of things, it would appear that the organisation of consciousness is a gradual realisation of the truth of the World, not merely as an atomic skeleton, but as the infinite glory that we know and delight in.

§ 6. By the division of scientific labour many departments of study have been created, to each of which men devote their whole lives. Passing over all sub-divisions of the sciences and omitting the merely descriptive investigations, there remain five great groups: Mathematics, Astronomy and Physics, Chemistry, Biology, Psychology. Each of these sciences has been explored with the greatest ardour; and the result is that, whatever the internal consistency of each, a certain unconformability has appeared amongst them, making it difficult to conceive of them as one system of Nature; yet human understanding requires that they shall be so conceived.

Besides the theoretical impossibility of applying pure Mathematics to Astronomy and Physics, of passing from the postulates of absolute Space, Time and Motion to the intricate relativity of actual phenomena, there is the practical difficulty of obtaining exact measurements of phenomena, seeing that such measurements must depend at last upon an appeal to sense-perception, and must be stated, after every precaution has been taken, as lying within certain limits of error. Yet, without exact measurements, how establish between the processes of Nature those equations which constitute explanation? The reply to this is that the more nearly actual measurements approach ideal exactness, the better is the verification of

physical theories, and the systematic cohesion of laws: so that a belief in the soundness of the methods employed, and in the uniformity of processes explored, continually increases.

In passing from Physics to Chemistry a difficulty emerges which is usually conceived of as if it were necessarily a problem to reduce chemical action to mechanical principles; and, similarly, in passing from Chemistry to Biology, it is often assumed that the phenomena of life in plants and animals must be reduced to chemistry and mechanics. To find some definite resemblance between all three orders of phenomena, the physical, chemical, and biological, is indeed, according to our present conceptions of explanation, a regulative principle of the philosophy of Nature; but the end would seem to be equally attained were it possible either to reduce any two of these orders of phenomena to the third, or to find some further ground upon which all three are explicable. The former of these courses has not yet succeeded; whilst the latter (I believe) has never been attempted.

But the transition from Biology to Psychology brings to light a far greater difficulty of explanation, the greatest problem known to speculation. For whilst Physics, Chemistry, and Biology have at least this in common, that they all treat of matter and motion, Psychology calls for a theory of the manifold of sensation, pleasure and pain, passion and volition; and the Philosophy of Nature, as a whole, requires that these phenomena shall be explained in harmony with the theories of matter and motion, in fact that Matter and Consciousness shall be reduced to the same concept. Now, subjectively, such a reduction can be made; for one's own organism and the whole external world are manifestly a construction of sensations and ideas in consciousness; but, objectively, whoever believes that there are other minds than his own must find it impossible to suppose that matter stands for nothing but his own construction; and approaching the question as the natural sciences do, it is plain that an organic consciousness capable of constructing a World is a late and recent product in the history of things. This opposition between the subjective or analytic and the objective or historical views, has been

forcibly presented by Shadworth Hodgson in his *Philosophy of Reflection.* Various theories of intercausation, parallelism, or other connection of Mind and Body will confront us in future chapters. Here I shall merely, by way of anticipation, state my own opinion: namely, that in our own consciousness we have an immediate knowledge of ultimate Reality, and that the remainder of Empirical Reality, including our own bodies and the external world, is a system of phenomena constructed in consciousness and in some manner representing the ultimate Reality. That Reality is universally conscious, but its whole being cannot be fully expressed by consciousness; so that as to the remainder of its being, it is transcendent, and can only be understood, partly, from the laws of phenomena, which represent it objectively, and partly, from the laws of self-consciousness, which does not represent it and is not a phenomenon but the Reality itself subjectively conditioned. What from these data can be inferred of transcendent Reality will hereinafter be considered: but it is not unknowable.

From what has been said it follows, that Matter and Consciousness cannot be wholly reduced to one concept. In Empirical Reality indeed, they are merely contrasted areas of consciousness itself—matter is in consciousness; in Physical Reality, matter is reduced to certain quantitative aspects of objective consciousness; but in ultimate Reality, matter has no place, being a phenomenon or representation of that Reality so far as Reality is not consciousness. It follows further that the concept of ultimate Reality is not simple but contains a duality, namely, Consciousness and the Transcendent Being or Idea that is conscious; and that, therefore, the ambition of Philosophy to attain to absolute simple Being, without difference or relation, is overstrained and illusory.

§ 7. Explanation is shown by logicians to consist in the discovery of Likeness between phenomena, or ideas, or their relations. The nature of explanation, then, is the last stronghold of those who impeach human knowledge on the ground of its relativity; for there is no Likeness unqualified by Difference. But this impeachment derives all its force from the rashness of those who demand an absolute simplicity of

conception. Apart from this infatuation, there is no reason why the Relativity of Knowledge should be a bar to the construction by the human mind of the scientific system of experience, or in other words, to the rise of the World to self-consciousness. The love of simplicity is a treacherous instinct; the belief in simplicity promises a theory of the world to dialectical ignorance if only enthusiastic or presumptuous enough.

But, fortunately, in the foundations of the human mind there is provision for our discovery of the fulness and variety as well as of the unity of the world. For the occurrence of a change or difference in some diffused, indefinite, potential sensibility, is the nearest approach we can make to a conception of the beginning of organic consciousness; and a reversal of this change or return to the antecedent condition, which thus by contrast obtains a higher degree of actuality, may be conceived as the experience from which a sense of likeness gradually emerges and grows into recognition. Recognition (if I may use the term in a generalised sense) is a condition of all the organism's adaptive correspondence with Nature, from reflex action to the highest scientific inference. It has been shown experimentally that conscious recognition is intrinsically pleasurable: and explanation is recognition amidst disguise. As the surprise of a new explanation subsides, there ensues a feeling of relief, familiarity, security. So strong is the pleasure of recognition that a merely customary familiarity of experience, or dogma, is often mistaken for understanding, and offers resistance to any profounder analysis; which, by requiring a rearrangement of ideas and bringing to light unnoticed differences, gives at first a feeling of strangeness allied to fear. But for this very reason the sense of difference, or discrimination, is as important as the sense of likeness, or assimilation, to the full explanation of the world. For men are too easily content to find the unity of thought in superficial resemblances, or in the use of some one word (such as the 'Absolute') to bundle up all differences. But the differences from which likeness emerges cling to it at every level of mental growth, alike in the detail of perception and in the widest reaches of specula-

tive thought. Discrimination saves us from swallowing stones for bread, and destroys the authority of premature systems of Philosophy. Bread, indeed, must be recognised, if starvation is to be avoided; and new systems of Philosophy must be established upon deeper resemblances, if our spiritual instincts are to be fulfilled. But a system that ends in unqualified simplicity, as the ultimate character of Reality, can never, strictly speaking, be conceived; and, therefore, I accept the reproach of not attempting to construct such a system.

The sceptical doubt must indeed remain, whether there be in the empirical world, in *Natura naturata*, any such unity as can satisfy the love of explanation in the human mind; and the only possible answer to this trope is the completion by posterity of the system of Positive Philosophy. If there be, in fact, no unity, discrimination will forbid the prolonged reign of any system of error, until the habit of recognising the irreconcilable differences of things shall give rise to resignation in that last scene of the tragedy of Reason.

Bacon found a chief source of the idols of the Den in the tendency of one man to perceive the resemblances, and of another to insist on the differences of phenomena; and Kant saw in these two kinds of men the constructive and critical thinkers. As in our present imperfect development every quality carries its defect, the assimilative mind is often too hasty in subsumption, and even resentful of exception; whilst the discriminative seems almost to hate explanation and to exult in the dilapidation of systems: for every animal uses its own weapons and rejoices in its own strength.

From the intellectual cravings after assimilation and discrimination spring our conceptions of the unity and uniformity of Nature amidst all the variety of phenomena; and those more definite conceptions of the persistence of matter and energy, or of the quantitative likeness or equality of the contents of Nature, amidst all changes throughout all time; and all the sciences, and our whole endeavour after a systematic knowledge of the world. These, in fact, are those forms of thought that necessarily govern our interpretation of things; not such products of psychic growth as Space and Causality,

forms that have a natural history. Hence the Metaphysical Relativity of the Kantian system needs no examination.

But what shall we say to the limits of explanation pointed out by Mill, namely, wherever in comparing phenomena we can find no resemblance? For the experimental psychologists have shown that there are more than 40,000 different sensations known to the human mind alone, to say nothing of other animals and the sons of Mars and of the Dog-star; and each distinguishable sensation must have its own law of generation. A solution of this difficulty may be attempted upon the basis of Spencer's speculation, that all different sensations are only different groupings of one original shock of change, the atom of consciousness; but this theory seems to be inapplicable to those sensations whose stimuli are chemical changes. Or, again, it may be said that the differences of our present consciousness are deceptive, since our differentiated sensations exhibit only a cross-section of consciousness developing in time, just as existing plants and animals exhibit only a cross-section of all the great processions of life, that are yet united by a common ancestry. For similarly all consciousness, whatever contrasts it now comprises, is one growth from age to age, by infinitesimal gradations self-distinguishing. But, strictly speaking, this conception of consciousness does not efface, but multiplies, the differences that frustrate explanation. If, as many considerations indicate, the differences that we perceive disguise innumerable imperceptible shades that come infinitely near resemblances, on the other hand, where our apperceptive consciousness finds unqualified sameness, there may again lurk as many imperceptible differences. It follows that the explanation of the World is not to be sought in the region of sensations or their proper laws, which only express its inexhaustible fulness and variety, and are common to us and the animals; but in the region of concepts, of laws of laws, and of the harmony of laws which lies open to human understanding.

BOOK II.—COSMOLOGY

CHAPTER VII

SUBSTANCE IN EXPERIENCE

§ 1. That the World should be a necessary existence, whilst yet we continually wonder at it: these things, says Schopenhauer, are contradictory. Not only do we continually wonder at it, but some have brought themselves to believe that it is but a dream. To one it is too monstrous, to another too insignificant for reality. And with apparent sobriety metaphysicians dispute, above all, whether the World is Substance; and, if so, in what sense.

Bodies moving in space or relatively at rest are often called 'substance' in an unsophisticated way of speaking; in Chemistry, too, one may speak of substances to be analysed, or resulting from analysis: they may also be called 'matter.' Substance and matter are regarded by Common Sense as immediately given in Empirical Reality, for otherwise it would not deserve to be called Reality. But most metaphysicians, if the ghosts of the study haunt them in the street, must fall in with the popular usage not without qualms and reservations; for they are accustomed to employ the terms Substance and Matter for something extremely subtle and obscure: something common to all concrete things without being discoverable in any of them; or something which makes itself indirectly known through things without ever being an object of experience; or something that by natural illusion is thought into things, though in fact there is nothing there. These hypotheses will be reviewed in the next chapter: in this one we are concerned with the substance accepted by Common Sense, empirical substance.

Now it is generally admitted that by reflection an empirical substance is resolvable into a group of qualities, founded severally on sensations, cohering in one place, or all moving together, and regarded as one perdurable whole. The metaphysical aspect of qualities, as distinguished from qualities of sense-perception, depends further upon a comparison of things perceived and an abstraction of their resemblances; and the relative unreality of the quality is the contrast of it as thought with the sensation-complex perceived. The coherence of the qualities of any substance is not side by side, like the physical cohesion of particles, but in interfusion, so that however small a part of any homogeneous substance be taken (provided it is still an object of actual, not merely conceptual, experience), it exhibits all the qualities characteristic of the whole. The foundation of the qualities in sensation, does not mean that each quality is derived exclusively from one corresponding kind of sensation, but that each of them may be derived from sensation simple or complex. Even the colour of an object (say gold) does not correspond to one pure sensation, but is a mixed result of chromatic and achromatic vision, and, as an extent of colour, involves movements of the eye; and such a quality as elasticity, though depending essentially on certain varying degrees of muscular strain, may be habitually signified by the image of something stretching or contracting and recovering itself in a regular manner.

The realisation of this position, that a substance is a group of qualities all of which are grounded in sensation, may be said to be the first step in Metaphysics, and whoever takes it never again looks reflectively upon the world with quite the same eyes; and yet it is a very simple step, and necessarily results from the fact that in analysing an object, or empirical substance, we are dealing with something that occurs in our consciousness, and can never find in it anything that is not a factor of our consciousness; for even if we discover in it qualities before unknown, these very discoveries appear in consciousness.

But as to the nature of the qualities, not merely in their subjective grounds, but in their present and universal objec-

tivity, and as to their relation to one another, to the substance they constitute or "inhere in," and to the Subject or mind that perceives them, there are many inventions.

According to Hume, the idea of a substance "is nothing but a collection of simple ideas, that are united by the imagination, and have a particular name assigned them"; either referred to an unknown something in which they are supposed to inhere, or at least supposed to be inseparably connected by the relations of contiguity and causation: the principle of union being regarded as the chief part of the complex idea (*Treatise*, Book I. Part II. § 6); and when such unity seems inadequate the imagination is apt to feign something unknown and invisible, which it supposes to continue the same amidst all variations, a substance, or original and first matter (*Treatise*, Part IV. § 3). To refer the connection of the simple ideas or qualities to the "imagination" without further ado, is characteristic of Hume, and must proceed either from carelessness, or the love of frightening his reader; for in § 3 of Part I. he has told us that imagination is not restrained to the same order and form with the original impressions. Therefore, it cannot be the condition of union amongst ideas that are "inseparably connected." Similarly Kant, as if following Hume, after observing that the elements of our representation of an object, or the synthesis of objects which is Nature, must be first given serially in experience, makes it the function of imagination (*Einbildung*) to retrieve the past or lapsing members of the series and represent the whole simultaneously. But he explains that the order of representations in the object cannot be capricious or arbitrary, because they are necessarily connected in one pure consciousness; that is, in the Universal Understanding in the World; in subservience to whose Categories, again, imagination analyses, classifies, and interprets individual experience according to rules, and thus (*e.g.*) subsumes an object as Substance (*K. d. r. V., transscendentale Deduktion*).

Whether this is a just account of Kant's view his own perplexity leaves me uncertain. But there is no doubt that Hume and Kant agree verbally as to the importance of the part played by imagination in constructing our idea of

Substance; and I think they are both right in what they mean, though their language is crude. That the qualities of what we now perceive as a concrete body were gradually united or differentiated in experience is highly probable, and that they now are in some way simultaneously presented is certain; and we must try to name the condition of this process and result, and of course imagination is our name for much later and more superficial mental activities. It is plainly that function which more recent writers have called 'retentiveness,' 'reinstatement,' 'integration.' We cannot expect to find ready-made any term to express such unique and obscure conditions; but perhaps it will be least misleading to call it "growth."

The qualities which we regard as belonging to a substance are sensations, or sensation-modes, that have been 'projected' and objectified, or differentiated in the course of organic history from the subjective life of feeling, by their special alliances with the sensations of movement and resistance. A point of colour (*e.g.*) is found to coincide with a point of pressure and resistance when, putting forth one's hand and touching an object, the colour of the object has the same relative brightness and distinctness as that of the hand, and a different relative brightness from that of the hand when not put forth so far: it thus comes to be regarded as at the end of such a possible movement or distance in space. Similarly with resonance, odour, warmth; they are found to increase as we approach the place of a thing, until their maximum intensity coincides with the solid core of resistance in that place. An account of this process will be found in books on Psychology: though some indeed dispute it; James (vol. ii. chap. xvii.) maintaining that sensations are external in space as perceived *ab initio*. But certainly he cannot directly know this, and it is inconsistent with his other statements. Mill's view, that sensation is originally neither internal nor external, seems to me the true one. But whilst in general this hypothesis is (I believe) correct, the reading of a thousand text-books will not enable us fully to realise it; because the process described is a growth, and involves the changes of character that always occur in growth; and because the essential

part of the process has not taken place within our own memory, nor within our own life, nor even within the life of the human race, but originates deep in the animal kingdom, how far back we cannot say.

§ 2. Now if any such hypothesis is true of the construction of an object as Substance, it is true of that context or synthesis of objects which is Nature on the perceptual plane. Nature has been projected in organic history as an Object in contrast with a Subject; but for the human individual it is preformed, or prepared for, in his inherited organisation; for the organic growth of perceptions in the mind corresponds with the growth of the nervous system. It is true that in man the complete formation of perception is delayed until some time after birth; he is born only half-baked. Hence our early post-natal growth and development are indeed accompanied by some small amount of 'experience' (for perhaps a disciple of Locke is bound to apply this term even to vague and confused sentience); but such experience bears no proportion to the development that takes place, and cannot be considered as "the cause" of it, or as more than a condition whose value depends upon the activities aroused in the central nervous regions by peripheral stimuli and limb-movement: activities which promote the differentiation of the brain and the co-ordination of its organs. We must consider that in a few months before birth the whole history of early animal life has been traversed; that the power that has brought this about cannot be supposed to cease at birth; that, accordingly, both before and after birth a man grows of his own impulse, like everything else in organic nature; and that the proportional influence of experience, inappreciable at first, grows greater and greater, in comparison with that of inherent development, up to some variable date.

Perception and the nervous system grow together; and whilst the perceptive powers are being established, and long afterwards, other more plastic powers of the mind appear, corresponding with nervous growths of a less stable character. Perhaps the necessity of completely interlacing the later powers of the mind (dependent on experience) with the perceptual system, is the chief reason why man is born with a perceptual

system so incomplete. However this may be, it is the later and more plastic powers of the mind that are properly called 'imagination,' 'reflection,' 'understanding'; and nothing can be more perverse than to explain the facts of perception by referring them to imagination or understanding, it is the anthropomorphic fallacy. The concept "Substance" is indeed a function of understanding; but what it stands for, the experience it subsumes, belongs to the perceptual plane and is shared by men and animals.

The objects as perceived are stable; and stable are the cerebral organs and connections of the perceptive apparatus, and therefore the correspondingly grouped sensations and suggestions or subrepresentations which, being "projected," constitute those objects. The objects and the brain are alike empirical substances, regarded as existing and perduring, whether we sleep or wake; and if we believe in a transcendent Substance, this must stand in the same relation to objects and to the brain, and must be regarded as the ultimate ground of the objective synthesis.

Because perception precedes the growth of reflection, the Object precedes Self; and therefore by all animals as well as by unsophisticated men, it is assumed to be an object for all, the context of which, or Nature, is alike for all; and therefore Hegel is mistaken when he says that "all consciousness of another object is also self-consciousness. The object is my idea: I am aware of the object as mine; and thus in it I am aware of me" (*Encycl.* iii. § 424). Not more than one man in a million can ever be got to say, in the moment of perception, "the object is my idea"; and he mistakes reflection for perception. For with perception goes the fact (it is more than conviction) that the tree stands there for everybody, since it belongs to the prepersonal life, and corresponds with stable nervous growths; whereas 'Self' and 'mine' belong to reflection, and correspond with the less stable nervous growths that are characteristic of human development.

§ 3. If then, an empirical substance yields to analysis nothing but a group of interfused qualities regarded as perdurable in one place, how can we be justified in speaking of a

"quality" at all, since this term is correlative with "substance" which, apart from the qualities, is a mere space? On the plane of Empirical Reality there is not much difficulty about this. Each quality, taken severally, is referred to the rest of the group: the scheme of judgment—S is Q—predicates co-existence or coinherence. That because it is possible to refer any one quality to the group, we may refer the whole list of qualities to something that still remains, may illustrate the common fallacy of "Division and Composition": for certainly we do not mean to refer them merely to the place in which they are found to co-exist. It is true that one quality is more important than all the rest, namely resistance; for in any circumstances wherever we find this, we say there is a Body; whilst any phenomenon in which this is wanting is declared an illusion. Still resistance is itself a quality and not Substance; for we do not refer other qualities, such as size or colour, merely to resistance.

Unity of place is, indeed, essential to the concept of Substance; as we see in the axioms that "a body can occupy only one place at the same time," and that "two bodies cannot occupy the same place at the same time." These are statements of universal experience in the jostling, collision, fracture and recoil of things, and in the manage of our own bodies; since we can only occupy the place of anything by removing it, and if it is too massive to be moved we cannot get there at all. Yet the fact that most things can be moved and, indeed, that all things do move, makes it impossible to identify substance with place. Nor is it the abstract of places; for each substance is in a particular place; and the common notions that qualities "inhere" in substance, and that substance "supports" its qualities, imply something more than place: it is hard to say what—a "confused idea of something," as Locke expresses it.

Perhaps this "something" is to be found in a primitive subjectivising of the object, the attributing to it of a sub-consciousness of weight and other sensations, like that consciousness of our own bodies that stands in the background of all our thoughts. And such a belief may be justifiable; but as soon as this idea of an object's inwardness is made

explicit, it loses the character of substance, and becomes an attribute, even if we shrink from calling it a quality. It cannot be regarded as 'supporting' qualities, nor as that in which they 'inhere.' Such expressions still seem a sort of illusory verbiage. And, indeed, it is plain that nothing that is represented in consciousness as belonging to a thing, can be regarded as the substance of it: for, as Spinoza says, "an attribute is *that which the intellect perceives* concerning substance, as constituting its essence." Cointerfusion of qualities must always be, for reflection, the content of Empirical Reality: otherwise in this region substance is unknown to analysis.

§ 4. The Qualities of Substances are usually distinguished as Primary and Secondary: those that are derived from "muscle sensations" of resistance and movement—solidity, size, weight and motion; and those that are derived from other senses—heat, colour, sonority, taste and smell. The distinction seems to have originated with Democritus or Leucippus in connection with the doctrine of atoms, and so far prevails at the present day that the physical sciences generally assume that the 'real' world, the world of Conceptual Reality, has only the primary qualities, and that the secondary depend upon the presence of a sensitive organism that, being stimulated by contact with the primary world, reacts in these astonishing ways.

The distinction thus drawn has both a practical and a speculative interest. For the primary world is (1) the seat of mechanical and chemical energy, which for our life's sake it behoves us to respect at every hour and in every action; (2) it is perdurable and unconditional, the same by day and night, whether we are present or absent (necessarily assumed to be so); (3) it is objective, that about which we can all agree, or come nearest to agreement; (4) it is measurable in three dimensions of space, in duration of existence or rate of change, and in energy: for these reasons it is the object of the conceptual system. But the secondary world is not satisfactorily measurable in any way except by referring its phenomena to primary standards. For even the discrimina-

tion of differences of quality is relative to the capacity of our senses, which varies even in normal subjects; and although degrees of intensity are doubtless felt, it is only within narrow limits, and how far they are from being measurable is shown by the difficulty of interpreting the subjective side of Weber's law, in deciding whether "least noticeable differences" are equal or proportional, or what else. The secondary world, again, is not perdurable but conditional, and goes and comes accordingly; it is not a unity or continuum, but consists of distinct genera of sense-qualities, visual, auditory, etc., related by their common dependence on the kinæsthesis; and its chief interest lies not in itself (though it is coloured far more constantly than the primary world by pleasure and pain), but in being a system of signs, whose significance lies in that outer region of possible utility and destruction.

Yet what a recondite, sophisticated, and difficult way of thinking, is this; and how many spectres it conjures up for one that it lays, if it can be said to lay any at all. Is it supposed to explain the meaning of Reality, by contrasting the primary world with one comparatively transient and therefore unreal? But both are real, empirically considered; and both are unreal, if all external experience is considered as merely phenomenal of something unknown.

Is it supposed that the distinction between the two worlds enables us, through the conceptual system, to explain the secondary by the primary, and thereby to reduce the number of elementary problems of existence? But every law of connection between mechanical or chemical change in the primary world and its corresponding sensation in the secondary, is (as we have seen) an unique fact, distinct in some character from every other; and this is the opposite of explanation. Secondary qualities cannot be deduced from the primary; they are connected with them by laws of experience, just as the connection between cause and effect (qualitatively) is a law of general experience. This does not impugn or render doubtful the connection of qualities, for there is no better assurance than constant experience; which, as a condition of consistency, is implied in all proof. But every law of the

connection of qualities is an extension of knowledge; and its explanatory value consists (1) in the collection of many experiences into the law itself, and (2) in having the same general character as other laws of such connection and not conflicting with them. By "the same general character" prevailing amongst laws of the connection of qualities, I mean (for example) that differences of colour correspond regularly to differences in the vibration rate of light-rays, though we cannot see any resemblance between the two series of differences; and again, that all sensations are classifiable with reference to chemical and mechanical stimuli; and that both kinds of stimuli operate upon nervous organs having specific differences but the same general constitution: and in all this there is no conflict. But this kind of explanation does not (except in the summarising of laws) reduce the number of the elementary problems of existence. And if we turn to the purely subjective side of experience, and consider that "mechanical and chemical stimuli," though referred to the primary world, are nevertheless grounded in sensations, it becomes impossible to think of explaining sensations by stimuli. Here, indeed, the distinction between primary and secondary qualities vanishes; for it belongs to the conceptual treatment of Nature as a perdurable thing. The muscle-sensations upon which the primary qualities are grounded, when considered merely as sensations, have no more claim than colour or sound to be the seat of energy, or perdurable, or unconditional, or objective, or directly measurable.

§ 5. Does then the distinction between Primary and Secondary Qualities throw any light upon the problem of external cognition, by contrasting the primary world as something known, with the secondary as a means of knowing it? But if cognition implies that the thing known is something distinct from the process or medium of knowing it, the primary world is no such object of cognition; for it is itself, by analysis, a fact in consciousness. Or if cognition implies the ancient doctrine that "like is known by like," we cannot be helped toward the understanding of it by a distinction that claims to be fundamental.

This brings us to one of the most harassing problems of Philosophy, the cognition of the World; for ever since Democritus and Plato the cognition and the Being of the World have been inseparable problems.

It is usually assumed by philosophers that the thing known is other than the cognition of it, that the tree yonder (to take Berkeley's example), whether seen or grasped, is not, as a cognition or percept, identical with the 'real' tree, the Tree-by-itself; and although this is not the view of cursory irreflective Common Sense, yet to dispute it leads to obvious difficulties. The tree or any other thing in Nature, is certainly not merely identical with *my* cognition of it, or any other man's; since all normal men know it in much the same way, and yet each of us with a certain difference; and each of us believes that it is perdurable and exists in some sense though none of us be looking on. If there is nothing but the cognition, there must be for each thing that we take to be one, as many in fact as there are observers of it, as many worlds as there are minds; and each thing in each world exists only as long as each mind perceives it. I really do not think this nonsense can be directly refuted; but fortunately refutation is needless, as it obtains no public sympathy or adhesion.

To avoid this unpopular conclusion it may be suggested that when we identify the object with our cognition, we are to mean—'so far as it is cognised,' and that a distinction may still be made between our knowledge of it and all there is of it that remains to be explored. 'Our cognition,' it may be said, 'does not indeed exhaust the object, for even about things already well known we often learn more. The object as distinguished from our cognition is the whole list of its properties known and unknown.' But this way out of the trap is immediately closed by two simple reflections: first, what is the present condition of those properties of an object that are not yet known?—and, secondly, if all were known would there not still be as many worlds as there are Subjects? For whatever further we may discover, thereupon becomes a fact of consciousness; so that the whole object

may be regarded as exhausted by my cognition actual and possible.

If, however, the thing known is something distinct from our knowledge of it, how shall we set any limits to the divergence? Indeed, may not the thing and the knowledge of it be so separate as to admit of no comparison; since, as Berkeley says, "how can an idea [percept] be like anything that is not an idea?" And in that case how can there be said to be any knowledge?

Next, let us suppose some one to take up the dogma that 'like is known by like,' and to find some support for it in modern monistic and animistic theories, such as occur in this volume: he may observe that in the animal organism a body and consciousness are, in some inexplicable way, always associated, and he may ask: 'May not Nature at large be like an organism in this, that consciousness in some form accompanies all things, or perhaps rather the energy of all things? —though this comes to much the same, since all things are always energising. If so, may not our consciousness of objects correspond with, and even resemble, the consciousness that is in objects or that accompanies their movements; so that our consciousness is indirectly, but not the less definitely, constantly and necessarily, a cognition of the things?'

It may be replied that such a suggestion is of no use to Common Sense, because that authority holds that perception is a knowledge of things themselves, not of how they feel. But is this just? Does not Common Sense hold that the tiles of the house yonder are red whether seen or not; and what sense is there in saying that things are red when none is looking, if they do not feel red? How common the belief is that secondary as well as primary qualities exist in the object, every one knows. Plato in the *Republic* (507) says, as a matter of course, that colour is in the object; though later in *Theætetus* (153) and *Timæus* (67) he treats it as sensation arising from collision between the activities of objects and those of the eye. Th. Whittaker has pointed out to me that in Plotinus' opinion qualities are not generated by the collisions of bodies, but that colours, tastes, etc., whether

aggregated in bodies and sensible, or dispersed and insensible, are imperishable (*Enn.* iv. 4, 29). But how completely moderns have rejected this belief may be seen in Mr. Spencer's remark (*Psych.* § 318) that, strictly, the secondary qualities are "not attributes of body at all," but are reactions upon "certain forces which pervade the universe"; they are a "product of the subject, the object, and the environing activities."

The difficulty of imagining that sensible qualities should exist in bodies (as uninstructed Common Sense assumes) just as they are known to us, must be acknowledged. It is not logically impossible; but it requires that our elaborate sense-organs with their cerebral connections should have been so adjusted during the evolution of the nervous system, that all the changes and disturbances implied in the excitation of cognition through various media with different modes of motion, are corrected by them; making our sensations not merely correspond with, but resemble, the qualities of things as they exist in the consciousness of Nature; whereby Nature is truly manifested to us, that is, known in phenomena.

To some minds, on the other hand, it may seem equally incredible that the manifold glories of the world should exist only for the higher animal life; that there should be no austere joy in deserts, no rapture in tropical wildernesses; that the music of winds and waters, and the colours of sky and sea, should be deaf and blind.

Yet what has Common Sense to say, in the case of temperature? Objectively, it is a continuous scale of vibration rates; but subjectively, intensity of heat or cold; and these are quite different sensations of special nerves. Everybody instinctively believes that fire is itself hot, and snow cold, not merely that they make us feel so. A defender of the immediate truth of sense-preception might possibly reply that our organism need not be supposed to respond to all the feelings of Nature; that our knowledge may be true, or supply the grounds of truth, without being exhaustive; that the diffusion of the temperature sense, necessary to preservation, is incompatible with such a differentiated organ as the eye for

light; but that, did such exist, we might perceive a heat-spectrum, and with further organs another spectrum of the 'chemical rays,' etc.; that possibly these are repetitions in lower and higher pitch of the light-spectrum; and that, if so, we know what they are, as we might fairly be said to know the musical scale even if able to perceive only one octave.

It is not, however, common sense to regard heat and cold as a sort of colours in lower octaves. Still, what refined hypotheses concerning the correspondence of our sensations with Nature may be within the power of an ingenious mind to frame, it is not for me to say. I decline to assert that a problem is insoluble merely because it baffles me; and any man may come to look very foolish who presumes to set a limit to the speculations of posterity. Nor can I condemn such speculations as a waste of time, as if there was not to be plenty of time before the sun goes out. There is really no hurry. Even if we fail to do some piece of work, or to make some discovery ourselves, posterity may be trusted to catch it up before the desolate end. Future generations may have reason to thank those who left them something to do, more than those who anticipated everything. How many grateful monuments may hereafter commemorate the men who did nothing and discovered nothing!

That the thing known should be without any ground of resemblance to the cognition of it, is a contradiction in terms. In such a relation there is no knowledge. But the ground of resemblance is not to be sought in feeling or sensation, though in some cases (say mechanical exertion) a resemblance is more imaginable than in the special sensations. It is rather in certain ultimate relations that we must look for the agreement. Things as phenomena and the brain as a phenomenon, are so differently constituted that we cannot suppose their energising to accompany similar consciousness; for, as Spinoza says, 'the emotions of animals differ from those of man as their nature differs from his' (*Eth.* iii. 57); and this principle extends to the inorganic world. But consciousness is Reality, and therefore Time, being a form of consciousness, is a form of Reality. Comparative consciousness, again, involves co-existence within

the span of the empirical Now; and therefore, although we may not be able to show that all consciousness is comparative, still co-existence is a possible form of Reality; and the co-existence of phenomena in Space suggests that co-existence is a universal condition of things transcendent or Being, that is, so far as Reality is not consciousness; though, since Space is a construction of organic consciousness, it may not be justifiable to treat co-existence *in Space* as a condition of things-by-themselves. And I may say here that I speak of things transcendent as things-by-themselves, because Reality so far as it is not consciousness cannot be an immediate object of consciousness; for then it would be a phenomenon. Nevertheless, since all Reality is conscious, things transcendent are not "by themselves" in the sense of being without consciousness.

There are, then, fundamental relations in which the thing known may agree with the cognition of it through phenomena: we are not obliged to maintain that the thing known is unknowable: and the meagre contents of knowledge here indicated may be enriched by further reflection. But, now, what are we to think of the vast extent and variety of our knowledge of the World? How does it stand to that faint Thing transcendent which, as Plato says of the Good, can hardly be discerned? The contrast of riches and penury seems to make the riches unreal and a kind of illusion. But this feeling is itself an illusion arising from the demand, that that which is not consciousness shall be an immediate content of consciousness, or a phenomenon; and from treating as empty that which is necessarily hidden. For knowledge is a consciousness, and, if there is anything other than consciousness, the knowledge of it can only be a representation in consciousness. Now the growth of such representation in life and mind I take to be a function of the evolution of Nature; and it is a true knowledge of Nature because it is her Self-knowledge. The universal consciousness grows into such knowledge. That in the course of its development it is very imperfect may be true; but that its central character and tendency should be deceptive, is a foolish anthropomorphic

superstitution. On the whole, there is nobody to deceive. It may have the defect of economy but not of ostentation.

§ 6. Besides the Secondary Qualities of a Body, interpreted as effects of certain energies of it upon a sensitive organism, and hence called by Spencer "dynamic qualities," it has other properties, by Locke called "powers" (*Of the Understanding*, Book II. chap. xxi.), whereby it acts on other bodies, altering their positions or their sensible qualities; and both the energies known to us as the secondary qualities and those by which it acts on other bodies, as well as their reactions and sensible changes, are traced to the primary qualities or to modifications of them. They are powers of attraction and propulsion, of absorbing, reflecting, or radiating light and heat, of generating or conducting electricity, of synthesis, growth, and reproduction; all generally regarded as reducible to movements or tendencies to move on the part of the atoms, molecules, cells, or whatever units constitute a body. To investigate the laws of all such energies belongs to the natural sciences. The facts are sometimes sensibly manifest, sometimes are insensible; and in the latter case may sometimes be made sensible by instruments or indirectly by indices, or may be given over to conceptual analysis and description according to the analogy of experience,—that is to hypothesis, which must be made definite enough to be tested by sensible experience or observation. The metaphysician notes that the scientific treatment of the energies of bodies always regards them as objects of actual or possible perception, or at least of intuition trained by perception, that is, as facts of objective consciousness. The *latens schematismus* and the *latens processus* are not regarded as appertaining to things-by-themselves; and all attempts to treat them as 'occult qualities' have been resultless. The 'positive' method prevails, and a metaphysician who proposed to adopt any other would hardly be considered worth a shrug.

Yet I suppose it is generally felt that the positive method is adhered to not as absolutely satisfying, but as the only possible one to work with for definite results. If the World, as it is known, is a construction and projection of the perceptual apparatus of our consciousness, how can 'power,' 'force,'

'energy,' have any place in it? In using such words we certainly attribute to objects a feeling corresponding with our own feelings of muscular exertion, which is in fact the ground of all primary qualities; and yet we cannot attribute this feeling to objects considered merely as our own perceptions; but can only mean that there goes along with the changes (however inconceivable) of things-by-themselves, manifest as movements and pressures of masses, a feeling of exertion in some way analogous to our own feeling of exertion; though the power or force, whatever it may be, belongs not to the thing's feeling but to the activity which that feeling accompanies. The greater diffusion of the feelings of temperature and exertion, connected with nearly every part of our bodies, not specially localised in organs like the retina, may make it easier for us to suppose that they are shared by inorganic Nature. From Nature comes all that we have, and we can hardly help allowing her (though under protest) the most vague and (during most of our life) the most submerged and neglected sensations of all that she has endowed us with.

According to this hypothesis, Laws of Nature, primarily descriptive of phenomena, have, through the mediation of phenomena, a correspondence with the powers and activities of things-by-themselves, that constitute transcendent Reality so far as that Reality is not itself consciousness. And we have seen that the assumption of such a Reality is forced upon us in many ways: by this instinctive belief in something not ourselves that consciously moves and strives; by the fact that the World, reflected on as a phenomenon, exists only in consciousness, and as such is a distinct world for each of us, whilst some common ground of all our experience is indispensable; by our need for some permanent condition of all the things of which we have occasional glimpses, which were already familiar to our life before subjective reflection began, are figured to us by the history of the world as antecedent to organic life, and in all our preparations for the future.

This ontological hypothesis has, I believe, the merit of not making the slightest difference to any scientific proposition.

§ 7. The fundamental physical quality of a body is

inertia: any ostensive body that wants it is considered an hallucination. It is sensibly known by the resistance things offer to our movements or efforts to move, or (more abstractly) by their resistance to acceleration. This is a measure of their mass, and coincides with the measurement of mass by weight. And it is in relation to mass that the physical principle is generally understood which Kant gives as the First Analogy of Experience: in all the changes of phenomena the substance is permanent, and its quantity in Nature is neither increased nor diminished.

The scientific evidence upon which the persistence of mass rests is, first, the verifiability of mechanical calculations made upon that assumption; and secondly, the results of chemical analysis and synthesis. And upon this basis the more positive minds are sometimes content to rest the ancient principle of the permanence of substance, or the persistence or conservation of matter, as an universal truth or axiom. But recent speculation as to the nature of atoms has tended to undermine the position, by attempting to resolve atoms into some condition of the ether; and plainly if atoms are in any way formed out of ether, and by parity of reason may return into it, the principle of persistence cannot be maintained with reference to the number of atoms in the world; nor could chemical or mechanical investigations be appealed to as disproving the increase or decrease of mass, since measurements are confessedly imperfect, and addition or subtraction of atoms might take place so slowly or in such remote parts of the universe as to escape detection.

This is a physical question which physical inquiry must determine by the appropriate methods; but there is a manifest speculative interest in the position that atoms and ether are not everlastingly distinct modes of existence. How else can the impulse to generalise to the utmost be satisfied? And should it be established, although the empirical evidence for the persistence of matter may be impaired, the principle (we may be sure) will not be abandoned: it will be extended from the mass of the world, or the number of atoms, to the sum of atoms and ether.

Kant observes that, in all ages, not only the philosopher but even the popular understanding has assumed the permanence of a substratum amidst all changes of phenomena. He does not mention the evidence he had for the popularity of the belief, and probably many of us could tell amusing stories of men who were far from believing it; but it is remarkable how easily the notion is grasped as soon as it is explained. Primitive genesis-myths assume something original by which the present world was begotten, hatched, or otherwise produced. All the Ionic cosmologies based on the transmutability of the elements, manifestly assume the permanence of the whole, and even perhaps of a substratum (as Kant says) in the sense that one of the elements—water, air, fire—is regarded as primordial and essential,—a notion that grows especially clear in Anaximander's ἄπειρον. Heracleitus gives the doctrine quantitative expression: "This order, which is the same in all things, no one of gods or men has made, but it was ever, is now, and ever shall be an everlasting Fire, fixed measures of it kindling and fixed measures of it going out" (Fr. 20, Burnet's translation). Still, as the exact measurement of 'Fire' is not an easy thing to conceive of, it is to the Atomists that we usually trace the modern conception of the persistence of matter.

But, says Kant, no one has attempted to prove this proposition; and, indeed, his own proof is such as might deter others from attempting any. Time, according to him, is a permanent form of intuition, but cannot be itself perceived. Consequently in perceptions or phenomena there must be a substratum representing time in general, so that every change or co-existence can be perceived in the act of cognition by the relation of phenomena to such substratum. This is Substance (*Analogien der Erfahrung*—A). The derivation of the permanence of substance, then, depends on Kant's peculiar tenets: first, that time is *a priori* whilst phenomena are empirical; so that their order can only be interpreted in relation to time: secondly, that change can only be conceived in contrast with something permanent. But it is better to regard the order of phenomena and the cognition of time as emerging correlatively; and our belief both in the infinity of time and in

the everlastingness of the world, as arising from our inexperience of any limit, and from the difficulty of conceiving any end, break, or loss, in the regress or progress of changes; and this belongs to Causation rather than to Substance so far as these can be distinguished. And for the perception of change, it is enough that phenomena themselves should change at different rates, some being relatively permanent; and such is our experience. And hence time is not permanent, and cannot be so conceived except by confounding it with the spatial representation of a line; which is merely a device for calculation, for chronology, or for picturing memories in a vista, because space is the more vivid and definite form of perception.

Hamilton identifies the permanence of Substance with the principle of Causality, and goes on to deduce it from "the imbecility of the human mind" which results in the law of the Conditioned. Hence an increase or decrease in the totality of existence cannot be "construed in thought" (*Metaphysics*, 38, 40). When Spencer began to write on Metaphysics he was a good deal influenced by Hamilton, and adapted *a priori* arguments to his own theory of mental evolution. "Our conception of Matter," he says (*First Principles*, § 48), "reduced to its simplest shape, is that of co-existent positions that offer resistance, as contrasted with our conception of Space, in which the co-existent positions offer no resistance." And the indestructibility of Matter is a datum of consciousness; for "conceive Space to be cleared of all bodies save one. Now imagine the remaining one not to be removed from its place, but to lapse into nothing whilst standing in that place. You fail. The space which was solid you cannot conceive becoming empty, save by transfer of that which made it solid." This results from the nature of thought as consisting in the establishment of relations; there can be no relation nor thought "when one of the related terms is absent from consciousness. Hence it is impossible to think of something becoming nothing, for the same reason that it is impossible to think of nothing becoming something—the reason, namely, that nothing cannot become an object of consciousness" (§ 53). Such necessities of thought have been rendered organic by immense accumula-

tions of experiences, received partly by the individual, but mainly by all ancestral individuals whose nervous systems he inherits (§ 54, *note*, referring to *Psych.* §§ 426-433).

To these arguments it may be replied, (1) that when challenged to imagine a body disappearing without being removed, I do not fail. To imagine a disappearance is possible, because it sometimes occurs in perception. To conceive it with belief is, indeed, impossible, because it is in contradiction with well-established concepts. But as Hamilton inconsistently says, "it is not competent to argue that what cannot be comprehended as possible by us is impossible in reality"; and the validity of concepts depends partly upon the quantity of experience they represent, partly upon the method of their framing. (2) That the disappearance of a body is not incompatible with relational thought, since what remains is not "nothing" but the space the body occupied, which is as positive an object of experience as the body itself was. (3) That the appeal to ancestral experience is inconsistent with the demand to be judged by "disciplined thought"; for this has only been attainable during two or three generations; and two or three generations must be admitted to count for hardly anything in comparison with our infinite lines of loose-thinking ancestors. In fact, the inductive evidence indicated by Mr. Spencer in § 52 (which might be indefinitely extended) is the means of disciplining thought, rendering the belief definite and the contrary truly inconceivable according to the analogy of experience, though far from unimaginable.

Still, when the indestructibility of Matter is first proposed to a boy, although the doctrine may be surprising, a little explanation makes it readily conceivable and a thing to be believed as a matter of course; so that an hereditary predisposition to understand and accept it may reasonably be assumed to exist; and such a predisposition needs to be accounted for.

The aspect of most things in Nature is relatively static and permanent: the ground under our feet, the distant hills, forests and watercourses. When increase or diminution takes place, some conditions are usually obvious, as that the swelling of streams and growth of plants depend upon rain, that the

growth of animals depends upon food. The chief contrary experiences are evaporation and certain meteoric phenomena; but as soon as men lit fires it became possible to interpret evaporation and the dispersal of clouds by analogy with smoke; lightning and shooting-stars were like the hurling of brands. These dumb suggestions became more intelligible with the rise of industries. In the shaping of arrow-heads or clubs, they grew lighter; but chips strewed the ground, and showed that alteration of form was not a destruction of material. The cares of a pastoral or agricultural life drew closer attention to the conditions of growth and destruction. Building impressed the belief that the construction of a new body needs the consumption of materials. Building and the division of land gave rise to the arts of measurement; and commerce to definite ideas of the measurement of all things. We may trace this in another aphorism of Heracleitus closely connected with that above quoted: "All things are exchanged for fire, and fire for all things; as wares are exchanged for gold, and gold for wares": cf. Fr. 29, in which to exceed measure is regarded as injustice.

Whilst, however, experience of Nature and of human economy may explain the predisposition to understand the permanence, transmutability, and measurability of things, yet the permanence of Substance amidst all changes, considered as a scientific postulate, depends upon something else and still more primitive, namely, the growth of all relational consciousness by discrimination and assimilation. To be dealt with, all things must be discriminated; but they must be assimilated to be understood. Hence it is an accepted doctrine that the explanation of Nature consists in discovering the resemblances of phenomena; and the most exact resemblance is equality of magnitudes. It follows that Nature cannot be intelligible unless amidst all changes exact equality is traceable in the fundamental properties of matter or substance. The conception, therefore, is employed in all investigation, and methodical investigation defines and justifies the conception.

That the permanence of Substance must be an universal truth because our understanding needs it and our narrow

experience does not contradict it, may seem too great a claim to be made by creatures whose sublimest discoveries have taught them their physical insignificance. But as laws of Nature are established in ever greater numbers and in ever growing harmony, and are confirmed by success in applying them to the arts on which our life securely builds, belief in the first postulate of concrete science will certainly increase in strength ; unless there be reason to suspect that the portion of the universe within the range of investigation is not a fair sample of the whole. At any rate the belief rests not on "the imbecility of the human mind," but springs from the function that has created science and made possible the reign of Man.

CHAPTER VIII

ONTOLOGY OF THE WORLD

§ 1. The belief in Substance is immanent in Empirical Reality and the concept of it has a place in popular understanding. But we have seen that reflective examination of the empirical notion leads to an ontological hypothesis concerning transcendent Substance, and we must review the various forms which this hypothesis has taken; forms which are nearly all of them still living, not merely fossil; though it may often seem to the student of Metaphysics as if, amidst familiar species of the modern world, he was confronted in some dark jungle with monsters of the Jurassic Age.

Bodies perceived in relative rest or motion, and popularly taken to be substantial, differ in many ways, and differences of cohesion and specific gravity are amongst the most obvious and general. Hence, very early, earth, water, air, and fire were discriminated as the four elements; and the first impulse of the philosophic instinct amongst the Greeks, when they attempted to explain the nature of the World, was to adopt this distinction of elements and try to find some common ground to which all might be reducible. Some surmised that one or another element was primordial, and that the rest were modifications of it by condensation and rarefaction. Anaximander suggested a boundless something that was not any one of the elements, but an indefinite totality out of which they all arose and into which they all relapsed. After a time, the conception of atoms was reached: minute, invisible bodies, infinite in number, of various but definite size, shape and weight; being themselves none of the four elements,

but in their ever-changing combinations giving birth to the elements and to all particular things. Then with the increasing tendency to abstraction came the notion of a certain characterless condition of things, itself without form or quality (*ὕλη, ὑποκειμένον*), which might be supposed to subsist in or underlie whatever has form or manifestation.

Now although, before this last stage was arrived at, a change had come in the positing of the problem, yet all these doctrines might have been the direct result of what may be called inductive reflection, a serious thinking about the facts without methodical analysis or experiment. They represent an enterprising but necessarily crude inquiry in Physics, Chemistry, or "Natural Philosophy," and do not partake of the characteristic difficulties of the metaphysics of Substance. These are due to that change in the positing of the philosophical problem that followed the attempt to construct a Theory of Knowledge.

In the Theory of Knowledge there are two capital investigations—by no means separable but convenient to distinguish—into (1) the possibility of Perception, and (2) the possibility of Science. The first may be traced to Democritus (or Leucippus), the second to Plato, and both issue in speculations that render the notion of Substance ever more and more obscure and mysterious. In offering some preliminary remarks upon the positions of these philosophers, it will fall in best with the plan of this chapter if we violate chronology and begin with Plato.

Plato's inquiry into the possibility of Science starts from the conception of Science itself as universal and necessary Knowledge; such, therefore, as cannot, he thought, be obtained from Empirical Reality, considered (according to the insight of Heracleitus) as subject to perpetual change. Another region of things must exist as the object of Science; a region of things changeless and eternal: Ideas visible to the mind, not to the senses, which nevertheless are the true natures and the causes of all objects of perception according to their kinds. A knowledge of the Idea, because it is one, must be universal; and necessary, because it is unchangeable:

and such knowledge is the only means of interpreting Empirical Reality. These Ideas corresponded to the Definitions sought by Socrates; and in the earlier of Plato's dialogues in which the theory occurs, they are a comprehensive collection, natural and artificial, substantive and relational; from which, in his later reflections, what Mill terms 'Natural Kinds' seem to have emerged as the most important. Plato, however, never succeeds in explaining the dialectic method by which these Ideas are to be discovered, nor their relations to one another, nor to the objects of perception and opinion; and, in fact, in the first part of the *Parmenides*, he is much more successful in demonstrating the impossibility of his own theory than he is in the *Phœdrus*, *Republic*, or *Phœdo*, where he endeavours to explain it. In his most ambitious constructions, he has recourse to parables of a glorified Animism, the earliest hypothesis of the human mind, upon which it always falls back with relief when fatigued and perplexed by speculation. So far as his positive conceptions are traceable he seems to have held in the later phases of his philosophy, that the Ideas, as objects and conditions of scientific thought and paradigms of Nature, are themselves thoughts of the *αὐτόζωον*, itself the supreme Idea (*Tim.* 30, 31 and 52 A); and this doctrine was developed by the Neo-Platonists, and has been recast by Hegel and his followers. The theory of Ideas was a statement of what is demanded by a certain conception of Science; a conception overstrained and erroneous. Kant pursued the same method, with results that are much more like Plato's than a hurried reader is apt to perceive. But we cannot help being astonished at the precocious audacity of Plato's philosophical instinct in demanding universal and necessary knowledge of the whole universe, when as yet no science existed but a little elementary Arithmetic and Geometry. From them the conception was derived; and yet they were regarded as an inferior kind of knowledge, compared with the divine comprehension that would be attainable by a dialectical intercourse with Ideas.

Elementary Mathematics also perhaps determined the statical way in which the Ideas were generally taken, for

numbers and figures were amongst the Ideas. It is true that, in the *Philebus* and *Sophistes*, Plato came to describe the Ideas (Cause or Being) as living, rational, and active; but these conceptions are obscure, and incoherent with the rest of his doctrine. It is true, again, that he saw the need and the possibility of Dynamics, a pure science of Motion (for so I interpret his account of Astronomy in the *Republic*, 529-30): but he never followed this indication. Had he been able to do so, he might have found that the true character of Ideas, as interpreters of the world of birth and change, is to be Universals (or Laws) of process: thereby avoiding the difficulty of connecting unchangeable Ideas with the Heracleitan flux of phenomena.

However, we are here chiefly concerned with the ontological consequences of the Ideal Theory; and we observe that it regards the truth of Being (or Substance, *οὐσία*) as (1), in a vague sense, the cause of Empirical Reality; whilst (2) it is divorced from that Reality, as having another nature. Such is Aristotle's interpretation, the justice of which is much disputed; and a history of the theory must discuss this question at length. But, again, our concern is with the opinions of philosophers, or with opinions ascribed to them, only so far as they have had an important influence upon the course of classical thought; and it will hardly be denied that the Platonic Ideas have, until recently, had most effect upon speculation according to this way of understanding them—the Scholastic *universalia ante rem*.

The hypothesis of Democritus concerning Atoms necessarily demanded a theory of Perception. For the atoms themselves were invisible and intangible and differed from one another only in shape, size, weight (proportionate to size) and position. Objects of perception are formed of tangible groups of atoms, from which some atoms emanating affect the soul (itself consisting of the finer sort of atoms); and thence arise sensible heat, colour, sound, smell, taste, in short the secondary qualities; whereas in the atoms and groups of atoms only the primary qualities are present. We perceive things, therefore, not as they really are, except perhaps in a gross way by touch, but

by a subjective representation which is entirely deceptive; though the real nature of things may be discovered by reasoning as distinct from sense-perception.

Now this fascinating paradox has haunted physical and metaphysical inquiry ever since; has been more prolific of hypotheses than even the theory of Ideas; has become so familiar that many thinkers take it for granted, as an ultimate fact, and as if the only business of speculation must be to shape a theory agreeing with it.

We may distinguish four principal doctrines concerning Substance which proceed from the Democritan theory of Perception: Materialism, Hypothetical Realism (as Hamilton calls it), Subjective Idealism, and Nihilism.

§ 2. Materialism holds that the world of Atoms with their primary qualities and motions, is the only real world; that it would exist much as it is now, if the finer atoms in animal bodies (nervous system) had no consciousness; that all subjective phenomena, including the secondary qualities of bodies, are relative, transient and non-essential—in Hobbes' words, "as striking the eye makes us fancy a light."

The radical error of Materialism is to assume that scientific theories are ontological doctrines. Hence three fallacies: (1) to regard that great mass of experience which consists in the secondary qualities of bodies as relatively unreal, though it comprises most of the data upon which scientific analyses are founded; (2) to disparage consciousness and thought, as a function of the brain, or epiphenomenon, though it is the very seat of science; and (3) to treat the remainder of Empirical Reality, the primary qualities of the object, together with the conceptual interpretation of it in terms of atoms and ether, as having independent Reality; though it is manifestly unknown except as object of a Subject, that is, as a phenomenon.

The plausibility of Materialism has been greatly extended in modern times by the theory of gravitation, which has taken the place of the Epicurean *clinamen*; by proofs of the persistence of matter and energy, giving definiteness to the ancient *ex nihilo nihil*; by the physiological researches that have discovered the chemical character of many vital processes, and

have on the whole strengthened the hypothesis that the animal body is an automaton independent of consciousness; and by the explanation that Natural Selection gives of the appearances of design in Nature.

On the other hand, the ontological significance of these discoveries has been unexpectedly weakened by the theory of Natural Selection. For it is a leading idea of that theory that every property of organic life is acquired and developed for its usefulness; and this condition must apply to consciousness, if consciousness is acquired; since it not only accompanies animal life (at least) but increases and develops step by step with the progress of organisation.

Now, if consciousness, as such, is useful, it must be a vehicle or mode of energy correlated with the physical forces, and therefore a reality in the same sense as they are. But if it is not useful, it must be necessary or essential; that is to say, it must be not an acquired attribute but inherent in Nature, and must appear in its organic form when organised animals appear, as a matter of course and because it cannot be otherwise. Whether, then, consciousness is a mode of energy correlated with the physical forces, and therefore capable of intervening in animal activities, is an all-important question. If it is not, and if all animal activities admit of a purely physiological explanation, consciousness cannot be regarded as an effect of organic matter and energy; because all the efficacy of physical energy (outward stimulus and inward potential) is absorbed in physical activities and their consequences in the environment. This is precisely why consciousness has been called an epiphenomenon, because the physical, chemical, and biological laws that explain phenomena, have not the slightest hold upon it. But to consciousness, as to anything else, the principle *ex nihilo nihil* and the Law of Continuity apply. Unless then, these principles be abandoned, consciousness must be regarded as a continuum self-generated and self-perpetuative from everlasting to everlasting. But if consciousness be a mode of energy, though it must then be real in the same sense as physical heat and light are, yet it is, like them, material, and it is conditional in its manifestations; and therefore

conceivably its realisation may be interrupted; it may be for vast periods of time non-existent, if the conditions of its manifestation nowhere exist. In short, to establish Materialism, the one requisite is, to show that consciousness absorbs, transmits, or propagates energy.

To me, certainly, it seems next to nonsense, or next after nonsense, to speak of consciousness as possibly a mode of physical energy; and it is as useless to identify it with the ether as with molecular nervous structures. How, in fact, do such notions differ from those of Epicurus, who thought the soul consisted of the finer sort of atoms; or from those of the Stoics, who said it was a kind of fire?

§ 3. Hypothetical Realism differs from Materialism (as I understand it) chiefly in two ways: (1) the Materialist holds that we perceive things as they really exist (at least in their primary qualities), whereas the Hypothetical Realist says that even in the primary qualities we perceive only signs or representations of the true Reality. (2) The Materialist holds that perception arises from the interaction of the inorganic world and organic (animal) bodies, both being of the same substance; whereas the Hypothetical Realist regards perception as due indeed to some stimulus from the material world, but as essentially depending upon the reciprocal activity of a Subject, soul or spirit, whose nature it is to perceive and know; and therefore he believes in two substances, a material and a spiritual.

As to what is the object of perception, the thing perceived, Hypothetical Realists are not agreed. Locke, *e.g.*, appears to have held that it was a *tertium quid* between mind and matter; for he speaks of abstract material substance as something of which we have only a confused idea; whilst particular substances (or things) exist in such a way that their primary qualities belong to them whether we perceive them or not; and of these particular things we obtain ideas by sensation. He thus recognises four factors in perception,—Material Substance, Things, Ideas, Spirits (*Essay concerning Human Understanding*, Book II. chap. xxiii.).

Malebranche, again, thought that the Cartesian distinction

between Mind and Matter (Thought and Extension) made any intercourse between the two impossible; that the material world, though it exists as created, is incapable of stimulating a mind to perceive it; but that what we perceive is the ideas of the world in God, by means of sensations (joined to the ideas) which He causes in us on the occasion of objects being present (*Recherche de la V.*, Bk. III. Pt. II. ch. vi.). This is what Malebranche calls "seeing all things in God"; but he should rather have said "understanding them there." For so far as perception is sensible, it is not in God, but caused by Him in us; whereupon the idea, which we know in God, interprets the thing to us according to its kind.

If the ideas in God are supposed to be distinct from our own, they constitute a sort of *tertium quid*, in as much as they are neither material things nor our ideas, though allied to our ideas, as beings also of intelligible, though more perfect nature. But perhaps Malebranche's view rather is, that the ideas of things in God are also our own by a limited participation — God being the place both of ideas and of spirits—a mystical doctrine which he pretends not to explain: neither do I.

To take another example: there can be no question that in Kant's view the thing perceived is a modification of our own minds, being constructed out of sensations by the imagination according to the forms of intuition and understanding. As for the sensations, they are due to the stimulus of some apparently alien condition, the Ding an sich; which, however, it is suggested may have the same source as Reason; and so it must in order to satisfy Kant's ethics. Now, although Substance, according to the system of the *K. d. r. V.*, is a category applicable only to phenomena, yet in the second edition, at least, the Ding an sich is either Substance or nothing at all; and Kant is very anxious that it shall not be nothing at all. In fact it is much like Locke's abstract Substance.

Every one knows how useless the notion of Substance is to the Hypothetical Realists. Malebranche received it as a burden laid upon him by the first chapter of Genesis: he had

no use for it. In other systems, where Substance is a mere X without assignable quality or character, it can resemble nothing in experience, and therefore can explain nothing. Perhaps, however, one character is always ascribed to Substance, namely, perdurability; and this is felt to be important, as corresponding with the continuity of the empirical World in past and future time, or during the sleep or absence of the empirical Subject. Still, such perdurability is of little avail unless some connection can be indicated between the supposed substance and the qualities of actual bodies; and all the terms once in use for suggesting the relation proposed, such as "support," "underlie," "inhere," "depend," are undisguisable metaphors. In Mill's opinion the notion of substance is partly due to our supposing that something must exist, related to the primary qualities of bodies in a way analogous to that in which the primary stand to the secondary. As the secondary qualities stand to the primary so do the primary to X—is a plausible adaptation of the "rule of three." But X remains a blank *quæsitum*. The form of inference is unfulfilled; for whilst the relation of secondary to primary qualities can be determined as a matter of fact by induction, to find the relation of the primary qualities to X we are left groping about in the emptiness of pure reason.

In this situation it is natural to the natural man to try to reduce Substance to Cause; and formerly the attempt was excusable, so easily current was the word Cause, and so destitute of precise meaning. But the excuse no longer exists: for—

(1) On any view of the grounds of the law of Causation, whether Humean, Kantian, or evolutionary, Causation is a category of experience, and to apply it to X is to make a transcendent use of it.

(2) Causation is the explanation of events, and neither substance nor quality is an event; in other words, Causation involves a series in time and the relation of Substance and Attribute does not.

(3) Again, every Cause is absorbed in its Effect; but Substance is not absorbed by its Attributes.

(4) The Cause is quantitatively equal to the Effect; but no quantitative relation between Substance and Attribute is intelligible.

(5) Causation implies the reciprocity of co-existing empirical substances or agents, as localised groups of interfused qualities: it cannot, therefore, explain the origin of such groups of qualities, nor the reciprocity obtaining between them.

The inapplicability of Cause and Effect—a category of the synthesis of phenomena—to the case of Reality and Phenomenon was insisted on by Schopenhauer.

Still, the notion of perdurable transcendent Substance has a function of its own in giving coherence to the system of experience. As a refuge from Solipsism and Nihilism, it is ancient, popular, and classical; and the modern academic outcry against the Ding an sich is hysterical. Taking consciousness to be immediate Reality, does it express or comprise the whole of Reality? If not, the remainder of Reality is not in consciousness but is manifested in consciousness by phenomena. The relation of Substance and Attribute is the same as Noumenon and Phenomenon, and accordingly Kant calls the unconditioned world the cosmological Idea. But these relations are incurably static and otiose; and therefore it may be better to name a new Category—Manifestation ("Objectivation," Schopenhauer called it)—and to recognise fully its one-sided character. It stands for a relation of which there is only one term in experience: it is therefore an Imperfect Category, not constitutive but only indicative or orectic; for the other term, lying beyond experience, is inapprehensible. But I think it reasonable (as shown in Chap. VII. § 5) to transfer to the transcendent term some of the forms of subjective Reality, if not also those of phenomena in space.

Let us first see whether there is not some other way of interpreting Substance which may make my hypothesis superfluous.

§ 4. Subjective Idealism—the doctrine that, since whatever we directly know is reducible to ideas (percepts or images), the world consists entirely of Spirits and their ideas—follows very naturally upon the recognition of the otiose and

ineffective character of X, the abstract Substance of Hypothetic Realism. Some critics suppose that Berkeley, the founder of Subjective Idealism, derived the doctrine from Malebranche, his senior contemporary, in whose theory Matter is most otiose and superfluous. But it seems a juster view that Berkeley proceeded from Locke, rejecting the "confused notion of Substance," which Locke had done much to discredit, and developing an hypothesis of the world as perceived, according to his own view of the impossibility of abstract ideas.

It is needless nowadays to explain that by 'ideas' Berkeley, following Locke, meant "whatever is the object of the mind," and therefore sensations and perceptions (contrary to the use of Malebranche) as well as images or representations of memory, imagination, reason; though the overlooking of his meaning, carefully explained by Berkeley, and obvious to every one who studies systems in their historical context, has misled innumerable critics, not only Dr. Johnson but even Kant. Natural objects, such as cherry trees, are percepts (or ideas); they are objects of a mind: a perceiving mind is essential to the existence of things perceived; whose *esse* is *percipi*; and to attempt to think of them as not perceived is to try to frame an abstract idea: which is impossible. By means of images, words, or signs, taken in a representative way, general thinking is possible, but not abstract thinking, as Locke had supposed. We can never separate in thought what may not possibly exist separately: a percept cannot exist without a percipient, and therefore cannot be thought to do so: it implies a contradiction. We cannot consider objects of the mind as even resembling things that are not objects of the mind: only an idea can be like an idea: colour cannot be like something invisible. A material substratum, without qualities and imperceivable, is the most monstrous and contradictory abstraction of all.

But besides ideas there are spirits. A spirit is a perceiving active being "entirely distinct from ideas." Ideas depend upon a perceiving mind or spirit; and as they only exist as perceived, we know all that they contain; and we do not perceive in them any power. They are passive and inert, and therefore we can have no idea of a spirit, but only a sort of notion got

by intuition, or reflection upon our own thinking and activity. All power resides in spirits: "I have no notion of any action distinct from volition," nor of volition except in a spirit (*Hyl. and Phil.* iii.).

Ideas in the narrow sense, those of memory and imagination, are under my control; but those of sensation, distinguished by greater vividness and by a certain unalterable order, are not. These latter "have an existence exterior to my mind, since I find them by experience to be independent of it." They cannot be caused by the supposed 'Matter,' for that is inert (such was the prevalent belief), and, moreover, has no ideas to communicate. Yet they exist in the intervals when I do not perceive them, preceded my birth and would survive my annihilation. And all finite spirits are in the same case in relation to such ideas. They must therefore be known to an omnipresent eternal Mind. Such a mind cannot be known to us by an inert idea, but only by a notion "obtained by reflecting on my own soul, heightening its powers and removing its imperfections." For God is of infinite power, creates and upholds the world, and presents it to our perception. Not that it is present to Him sensibly as it is to us; but "there is a twofold state of things, the one ectypal or natural, the other archetypal and eternal. The former was created in time" [made perceivable to finite minds—angels]; "the latter existed from everlasting in the mind of God" (*Hyl. and Phil.* iii.).

It thus appears that Berkeley acknowledged the need of a perdurable Substance corresponding with the continuity of Physical Reality, but found this in the Theological Idea and could dispense with the cosmological. The hypothesis is complicated by archetypal Ideas, merely taken for granted; and by the relation of these to the ectypal, which, whether by imitation or participation, introduces all the controversy concerning the *universalia ante rem.* I fear, too, he ought to have seen that a mind without sensibility is an impossible abstract idea. But were the divine ideas sensible and qualitatively the same as ours, yet their existence would not help the problem of external perception; for, as Mill says, the divine ideas are not *identical* with those of a finite mind, and cannot constitute or

sustain *my* world. And, finally, spirits are not only perceiving but active; they are agents: their whole being is not expressed in perceiving or knowing; for ideas cannot be like a power, nor can a "notion" we have of it. A notion of our activity is not itself that activity. The power of God is a separate thing from the natural World in time and in consciousness. Consciousness, then, is not power; the consciousness of power is not power; there is something more than consciousness in Berkeley's ultimate Being.

§ 5. Nihilism is the doctrine that there is no Substance of either matter or mind, that perceptions and ideas are the only realities. To ascribe this position to Hume is an unwarrantable grafting of a dogma upon his scepticism. Some oriental scholars tell us that Nihilism is to be found in the metaphysics of Buddhism; but Karma, the synthetic principle of the world, according to that philosophy, a sort of mystical causation allied to Nemesis, implies that in Reality there is something else than consciousness. Again, Mill's Psychological Theory of an External World, expounded in his *Examination of Hamilton's Philosophy* (chap. xi. and Appendix to chap. xii.), has this in common with Nihilism, that it attempts to restate the doctrine of Subjective Idealism without Berkeley's theological hypothesis. Mill undertakes to show that the belief in an external World is not intuitive but acquired, if it be granted (1) that the human mind is capable of expectation, and that the Laws of Association describe the course of its ideas; and (2) that in Nature sensations occur in uniform orders simultaneous and successive. The belief to be explained is, that things exist when unperceived and unthought of, and even before being known either by ourselves or others, and would exist if we were all annihilated, and that there is something perdurable and independent of us, which is moreover a sort of substratum and cause of our sensations.

The first instructive experience is that when some sensations are actual others are possible, namely, those obtainable in the next room and in all parts of the world; and these are generally far more important to me than my present actual sensations. Then, every particular object presents the same

contrast: it is a group of sensations, some actual, others possible. If the sensation of colour is actual, resistance is possible; so that there arises the notion of a permanent background or substratum to any actual experience. Call this group a thing, instead of a group of sensations, and we easily imagine it is something else than sensations. Again, sensations have laws of recurrence; but the most important of all laws, Causation, prevails, chiefly, amongst not the actual but the possible sensations, effecting changes in them and consequently in our actual sensations. If the changes occur in our absence we have different sensations on returning, and we learn to expect such changes according to laws. Distribution of things in place is less regular than causation, but it is definite; any absent thing or group of sensations (say, a chair in the next room) can only be realised by going through certain definite series of sensations. Such law and order is independent of our will; therefore the possibilities of sensation are believed to be independent of us. The possibilities and the order of them are the same for us and for other minds; therefore they are external to us. Finally, the notion of Matter as something differing from and underlying all series and groups of sensations, is generated by our conceiving, negatively, something which differs from all experience as the elements of experience differ from one another, and which stands in the background of all sensations as the possible sensations underlie the actual. Thus we inevitably grow up in the belief that there is something permanent, independent, external, unlike all sense-experience and yet the ground and cause of that experience and its laws.

Remembering the state of Psychology when Mill wrote, it will be admitted that his theory was well-reasoned: something closely allied to it was accepted by Bain, Huxley and others. Bain, indeed, in his *Life of J. S. Mill* (chap. iv.; cf. *Senses and Intellect*, "Intellect," chap. i. § 38), says that more stress should have been laid upon the sense of resistance as fundamental in our objective consciousness, and upon the fact of the object being common to others as proving its independence of ourselves. He also explains the importance of the definite changes which sensations of sight, hearing, etc.,

undergo according to our own movements: in strong contrast with the relation between our movements and subjective feelings. It should also, I think, be pointed out that the connection between our own mind and one sensation-group (our body), being transferred by analogy (whether justifiably or not) to other sensation-groups, saves the notion of Matter, as something differing from and underlying all groups and series of sensations, from being entirely negative. Mill's assumption that our most profound forms of cognition can be explained by conscious experience, allowing nothing for organic inheritance and growth, is merely a clue to the date of his book.

But it will be observed that Mill's original purpose was to give a merely psychological account of external perception —an analysis of the belief in an external World, and of how that belief is arrived at; and had that been the whole result, his doctrine could hardly have figured in our present ontological investigation. He would have repudiated Ontology as a delusive place of spectres; but that many of his readers took the "possibilities of sensation" in an ontological sense, is plain from the criticisms they published; and I think their misapprehension modified Mill's own conception of his theory. For in the Appendix to chap. xii. he writes, that almost all philosophers are agreed "that Substance need only be postulated as a support for phenomena, or as a bond of connection to hold a group or series of otherwise unconnected phenomena together: let us only then think away the support, and suppose the phenomena to remain, and to be held together in the same groups and series by some other agency, or without any agency but an internal law, and every consequence follows without Substance, for the sake of which Substance was assumed." In this passage "some other agency" might be the Divine Mind, as in Berkeley's theory; "without any agency but an internal law," suggests that 'law' may be an ontological agent,—but this is only a verbal slip. Mill must be understood to say that a law of the order of experience, or the uniformity of experience itself, is enough without any ground beyond experience.

Distinctions that may appear pedantic are often indispensable. There are three ways of considering the external World: (1) to give a psychological explanation of our belief in it: Mill's original purpose, as to which we may say of his work —so far good. (2) To determine the methodological conception of Nature; that is, a conception adequate to the demands of the Natural Sciences: for which Mill's suggestion of 'groups and series of phenomena connected only by laws' may suffice; it is equivalent to the region of Empirical and Physical Reality. This is the supreme methodological postulate, and according to some philosophers the determination of it is the limit of Metaphysics (see the discussions in Karl Pearson's *Grammar of Science*). But (3) there remains the ontological question, whether to complete the whole circuit of our Knowledge and Belief anything must be assumed besides the phenomena? As to Mill's theory, what, after all, are the "possibilities of sensation"? How can "phenomena" be supposed to remain in the absence of a Subject?

Two points seem to me of chief importance: (1) to account for changes of phenomena that go on in the absence of any known percipient—say the burning away of a fire whilst we are out of the room. No doubt we think of this according to the analogy of experience, as a series of perceptions which we should have had if present. But, then, as we were not present, there was for us no real possibility of sensation but only one of the conditions—a condition of the Non-Ego. What was it? Clearly, there can be no "permanent possibility of sensation" unless a Subject is permanently present: in his absence, there can be merely some unknown condition of things, such that the realisation of sensations is contingent only on the Subject's return. The case of the World before the genesis of animal life or sensitive beings, is in the same position. We think of it as we should have perceived it had we been present: but as we were not there, and yet must either hold that there was something there, or else give up our belief in the continuity of the World, we may if we like call that something 'a permanent condition not ourselves of the possibility

of sensation,' but this seems only long-hand for Ding an sich, or Being, or X.

Then (2) there is the fact that the external world is believed to be common to oneself and others. Mill says in the Appendix to chaps. xi. xii.: "On the same evidence on which I recognise foreign threads of consciousness, I believe that the Permanent Possibilities of sensation are common to them and to me: but not the sensations." The Permanent Possibilities then, are not themselves sensations; they are not themselves objects of cognition, but one side of the conditions of cognition; and, as such, in their one-sidedness, permanent and apparently independent, but unknown. What is this but Hypothetical Realism?

Thus even the working out of the Psychological Theory seems to involve Ontology: and the interest of this for us is, that we are inquiring whether any such theory of Substance is necessary to complete the system of Empirical Reality. Physical theories of Nature assume the presence of the Subject as a latent term in all their propositions; even atoms and ether are conceived in analogy with objects perceived; the continuity of Nature in all directions is an unfailing contingency of one phenomenon upon another. But if we admit the possibility of any state of the World in which no organic consciousness exists, there is no longer a possibility of organised percepts. How then shall we conceive or express that state of the World?

§ 6. This surd of analysis, then, this perdurable somewhat, independent certainly of our private minds, can it be rationalised by any of the doctrines that descend to us from Plato? They are chiefly three: (1) That Ideas are the sole Reality of the World, self-existent and the ground of all particular things; (2) that the Ideas are archetypes of all things, but exist in the Divine Mind; (3) that Ideas or Forms are the essence of all things and immanent in them—*universalia in re.*

The third doctrine was never able to give any account of the accidents or differences of things without referring to Matter; and, if interpreted according to modern Methodology, in which 'Universal' is equivalent to Definition or Law, it is

compatible with Materialism. The first doctrine is no longer maintained; the second, that the Ideas exist in a Divine Mind, is a compromise with Theology. It gives by anthropomorphic analogy a factitious unity to the Ideas, whereas their unity must subsist in their relations; but it rests the World upon Reason, not Will, and makes (as Hooker says) the Being of God a kind of law to His working.

Berkeley, in his earlier writings, made only a tentative alliance with Hellenic thought; but in *Siris* we find that its influence has grown upon him; so that by suggestion rather than assertion he leads us to the nobler view of an Universal Reason, and of our relation to it, citing the authority of Plato, Aristotle, the Neo-Platonists, and others; though not without hints of their probable indebtedness to Moses. More explicitly the doctrine is stated by Cudworth (*Eternal and Im. Mor.* Book I. chap. iii. § 7), and it seems to be the sense of many theologians who follow the Johannine Gospel. But it had taken little hold of our Philosophy until the imposing vogue of such theories in Germany gained the adhesion of certain English thinkers, most notably Coleridge and Green. As it cannot matter which exposition of this view we take, I shall consider it chiefly as it appears in Green: he being the most recent and the most explicit, and availing himself of modern scientific doctrines in his exposition.

According to Green, Nature is a system of relations; it is essentially knowledge: in the experience of each man the manifold particulars presented to him are combined into one orderly whole by the activity of his intelligence; and if his experience is imperfect and fragmentary, implying a greater whole beyond it, that greater whole can only be conceived as real and orderly and one, by means of a unifying principle analogous to—say, rather, the original of—human thought: namely, the Universal Reason (*Prolegomena*, Book I. chap. i.). Such is the ground of the perdurability of things and of their independence of the particular Subject, which are unexplained by Mill and Berkeley; for they make the mistake of beginning with inert sensations or ideas that have no principle of unity. Should Green be asked how sensation is to be explained if

we begin with understanding, his reply is, that we have no knowledge of sensation merely as such and unrelated, and that what we regard as the sensation-element in perception is found on examination to be determinable only in its relations *ad infinitum* (cf. Hegel's *Encyklopädie*, § 20). Sensation is an illusion of subjective consciousness. In the real world of knowledge there is nothing that needs a Ding an sich to account for it, or anything other than the spiritual principle in Nature (§§ 42-51).

Now it is true, in my judgment, that wholly unrelated sensation is unknown: from the fact that our consciousness is relational it follows that if sensations are known it must be in relations; but it also follows that there must be terms for relations to relate, and that at last these terms cannot themselves be relations. Nature, as a system of relations that at last relate nothing, is both a contradiction in thought and a divorce of experience. Even Plotinus found a place for Matter as τὸ ἔσχατον: no bad name for elementary sensation, whatever that may be.

Instead of this abstract method of explaining away sensation, an Hegelian may resort to confusion of metaphors. In Hutchison Stirling's *Secret of Hegel* (Book I. chap. iii.) he says that the thought which constitutes the world is not "subjective thought; it is objective thought; it is thought really *out there*, if you will, in that incrustation that is named the world. It, this world and all outer objects, are but sensuous congeries, sensuous incrustations of these thoughts. Did a human subject not exist, it is conceivable that this congeries and incrustation would still exist." But it matters little, for "Thought is a system and this system is the universe, and the element of sense, or what we conceive as that element, is nothing as against this system, and can only be named with propriety the Other." Sensuous incrustations of thought, then, are independent of man (or of a sensuous Subject), and for the Absolute they are the Other. It is useless to ask, how can there be an Other for the Absolute, or how the Absolute's own thoughts can incrust and congest themselves into an Other; for in this system the Absolute is

constructed to contain whatever it may be convenient to find there.

It occurs to Green that the word "thought" is hardly strong enough to characterise the unifying principle in Nature; for of course our thoughts are transient and often erroneous, and we correct them by Nature which is permanent and unchangeable; and he suggests that the true character of thought is rather to be sought in the unity of its object, that is, in Nature itself (§ 47). To understand Nature he has referred us to our own thought; and now for the truth of thought he refers us to Nature. Pursuing the latter suggestion, he goes on to argue that our thought is not a process in time. But it would be an intricate task to pursue his argument in detail; so seeing that, in fact, thought does take time, I shall be content to exhibit under three heads the difficulties of understandiug Nature or the Laws of Nature as thought.

In the first place, it cannot be admitted that the system of Nature is only to be understood as the content of an Universal Unity of Apperception. The analogy of the human mind gives no support to such a view; every mind comprises and depends upon an infinity of indiscernible elements that never enter into the unity of apperception; and, moreover, every mind once contained a vast deal that, having passed through that unity, has disappeared beyond its grasp. Again, in human minds the unity of apperception does not determine the laws of growth, but is itself a gradual outcome of those laws: so that, by analogy, an Universal Unity of Apperception would cast little or no light upon the reciprocity and causation of things in the World, but must rather be explained as a result of them—as, in fact, the brain of the philosopher must be explained. Hence physical science conceives the world as unified by Gravity, the Conservation of Energy, etc.

In the second place, most laws of the perdurable and independent contents of Nature, are not like laws of the human mind. A fire which, during my absence, burns itself out and falls to the bottom of the grate, follows chemical and

mechanical laws; whilst the laws of the mind are (or are analogous to) those of organic life, or else peculiarly subjective.

In the third place, to speak of objective Thought as so "incrusted and congested" as to become common to all percipients, or in any way directly to manifest itself to all beholders, is to overlook the essential subjectivity of thought in the usual sense of the word. Thought may be objective in the sense that all can agree to think it; and in this sense every scientific law is an objective thought. But in the sense of being an object of perception to others, "objective thought" is a contradiction in terms. Thought in the individual is only known to himself; and can only be expressed to others by grimace, gesticulation, speech, or some other bodily activity. Hence, if in such a case it is possible at all to pursue an analogy, we ought to infer that the objective Thought of Universal Reason can only find public expression (so to speak) through the activity of bodies; and this I take to be the Semitic or popular sense in which God is said to reveal Himself in His creation. But if there is no analogy with human thought, there is no meaning in the words.

I conclude, then, that to speak of Nature as itself the Universal Reason or Thought, is an abuse of language (cf. Hegel's *Encyklopädie*, § 24); that the objectifying or hypostatising of thought does not give us the differential characters of inorganic Nature; and that it does not explain the fact of Empirical Reality, where thought and sensation meet in the perceptions and experience of normal men.

There are three senses in which the World may by a figure of speech be called rational: (1) in the Semitic or popular sense, according to which it is believed to be a created material thing, operating by laws imposed by God and, of course, by the Reason of God,—it is a work of Reason. (2) By a sort of metonymy, transferring to an object the name of an activity concerned with it; for as the interpretation of Nature is the work of Reason, the interpretation itself, when discovered, may be called rational. (3) Since every result of the interpretation, displaying continuity and universality, is admitted to govern every subsequent inquiry, the World, whose character is given by that interpretation, comes more and more to be regarded as

the judge, or as the type and fulfilment of Reason herself. But it may be a left-handed compliment to ascribe to the World our own faculties; and whether it is finally justifiable to do so is a consideration beyond the Metaphysics of Nature.

§ 7. It remains to consider certain systems of Monism, in which Absolute Substance is conceived as neither Mind nor Matter, but as a somewhat of which both these are manifestations. It will suffice to notice three: Spinoza's, Schopenhauer's and Spencer's.

According to Spinoza, God is a Substance of infinite attributes, of which two enter into human nature and are known to us, namely, Thought and Extension. The attributes are diversified into modes: every mode of thought corresponds with a mode of extension, and all changes or processes of the world run a parallel course in both modes: there is no causation between the lines of change. God is both a thinking Thing and an extended Thing; and the full knowledge of this in all its relations and consequences is human perfection and happiness.

Now, in so far as God exists in other attributes than Thought and Extension, He is to us unknowable; but must be known to some mind; for an attribute implies mind to perceive it. Hence it may be said that since an attribute is only a way of perceiving Substance, and since Substance is a perceiving Thing, Spinoza's system works out into Absolute Idealism. But certainly Spinoza did not intend this. That there is something other than consciousness, is necessary to his doctrine, that it is only as the human body is a mode of extension that the human mind is able to perceive extended things and to understand the order of Nature. That God can only be known to mind is an identical proposition; but it is not merely as mind that He is known.

The existence of God appears in a system of rigidly mechanical and mental determinations. Substance apart from the attributes has no place in the course of the world, which conforms to the requirements of a scientific Methodology. The name of God in Spinoza's system is a kind of rhetoric, softening the intellectuality of his philosophy, but never

modifying its career; and we see in his reception by mankind that the rhetoric was effectual with himself rather than with his readers. Not that he was insincere: the place of God in his system was derived both from his racial traditions and from his Cartesian culture: and if every one is to be called insincere who clings to certain words that have little intellectual significance for him, few of us can pass for honest. But I hold that the general judgment of men in the seventeenth and eighteenth centuries, that the author who often uses the phrase 'God or Nature' was a Naturalist rather than a Theologian, is defensible. In his heart he was, as Coleridge said, a "God-intoxicated man"; but his system, apart from his own feelings about it,—as a moment in the history of thought,—cannot be called "Acosmism," as by Hegel, without confusion of ideas. Hence, although the name of God gave him strength to cast out many scholastic prejudices, it remained a name and a feeling.

Schopenhauer's theory is that the Reality of the World is Will; but this Will is originally blind: Ideas, consciousness, understanding, phenomena in space, are all of them results of its activity. The primordial exertion of the Will is as obscure as the beginning of things in every system that from the One pretends to derive the many. According to Schopenhauer's verbal formula, the first objectifying of the Will takes place in the species of things (Ideas); the second, in individuals in Time and Space: all the forces of Nature and all the desires of beasts and men are also modes of its manifestation. He adopts Kant's position in the *Transcendentale Analytik* that Causality is a judgment applicable only to the synthesis of phenomena, and therefore not to the objectifying of the Will in phenomena. We find in our own being that Will is the Reality, our body its phenomenon; and the same is true of the whole World.

Now the Will is evil: its crime is to forsake its absolute condition, sole and eternal, and to multiply itself in individuals ever striving and perishing. That this endeavour is evil the universal pain of animal life declares: in which life, through the advent of consciousness and perception, a

manifold existence first becomes recognisable in Time and Space; for these, as Kant showed, are forms of perception, and are the principles of individuation. It follows that our existence as individuals is illusory; in Reality the one Will lives in each and all. Intelligence increases with organisation to meet the increasing complexity of life; it culminates in Man, or rather in men of genius; and then the Will meets with Nemesis; for by art-intuition, by sympathy and, above all, by philosophy the falsehood of individuality with all its strife and pain is felt and seen and repudiated.

Schopenhauer, then, regards consciousness as a secondary and ancillary thing in the World, brought forth for the service of the individual life; and he gives no intelligible derivation of it. Bewustlosigkeit ist der ursprüngliche und natürliche Zustand aller Dinge. Most things remain in this state: plants have at most a faint analogue of consciousness; the lowest animals merely a glimmering of it (*Welt als W. u. V.*, Ergänzungen, Book I. chap. xv.). Yet at the end of the previous chapter he has speculated upon grades of subconsciousness in man, and might have extended the conception to inorganic Nature. I seem to remember that somewhere he does so, but cannot recover the passage. The term 'Will' suggests consciousness; but for Schopenhauer Will is the genus of all forces, not (as often conceived) a species of force (*W. a. W. u. V.*, Book II. chap. xxii.). Will, as subjectively experienced, is consciousness; but consciousness is not force, and can never be derived from force, nor traced to anything that is not consciousness. It is of no avail, for instance, to invent the name of 'metakinesis' to bridge the gulf between kinesis and consciousness. It is like Kant's attempt to bring Understanding to Sense by means of Imagination; or like the series of emanations or generations by which Plotinus derives Matter from the One. A middle term between concepts cannot make them agree; it can only exhibit their agreement; where no agreement exists no middle term can make it conceivable. If we propose a middle term that does not agree with either extreme, we then have not one inconceivable but two inconceivables; and to increase the number of

inconceivables does not decrease their inconceivability. Hence, if Schopenhauer's system is not sheer Dynamism, its Reality is altogether distinct from Consciousness.

In Spencer's philosophy (*Psychology*, Part VII.) the Absolute is described as something existing beyond consciousness, and unknowable except as the Force implied in our sense of resistance to muscular efforts, and as corresponding in its relations, or rather in the variation of its relations, with changes in the world of our consciousness. He calls his ontological doctrine Transfigured Realism. The development of our consciousness from a primitive sentiency in which there is no distinction of Object and Subject, gradually gives rise to that distinction and, at last, to a full recognition within the world of consciousness of two contrasted orders of phenomena which respectively are vivid and faint, original and copy, etc., each order controlled by characteristic laws. Thus what are usually called mind and matter are both of them departments of consciousness, and take their rise, during the development of organic life and mind, from something which is neither one nor the other, but is co-manifested in both. Belief in such an entity is necessarily generated by experience, and is indispensable to an understanding of the permanence and continuity of things.

There is some resemblance between this view and Spinoza's, that God is unknowable to us in all but two of His attributes, and in these two is simultaneously manifested; but there are these differences. According to Spinoza, the attribute of Extension is only indirectly known to us through modes of thought, that correspond to modifications of our extended body as affected by other modes of extension. Extended things in the rest of the world are not directly perceivable. According to Spencer, however, the whole of the object-world is directly given in experience, and is a division of consciousness itself. For Spinoza, again, the attributes are the Substance in its own knowledge; whereas for Spencer Object and Subject imply unassignable correspondences with the Absolute.

Now, admiring as I do Spencer's account of the develop-

ment of the knowledge of Object and Subject so far as it is psychological, I am unable to follow the ontological inferences. His argument starts from what I have called Empirical Reality, in which (as he says) the opposition of Self and Not-self is immediately given. Against Idealism he urges that the conviction of Realism concerning the reality of the Not-self is (*a*) prior to reflective Idealism; (*b*) direct, and so simple as to seem undecomposable; (*c*) vivid and distinct; (*d*) implies the Universal Postulate (inconceivability of the opposite) only once (chaps. vi. vii. viii. and xii.). But every one of these arguments is more favourable to what he calls 'Crude Realism' (Empirical Reality) as against Transfigured Realism; which is (*a*) later; (*b*) indirect and far from simple; (*c*) exceedingly faint and indistinct; (*d*) implies the Universal Postulate a great many times: indeed we must presently inquire whether it is conceivable at all.

Then, the psychological analysis of the conviction of Realism discloses at the basis of our objective consciousness, a feeling of resistance to our efforts, and the representation of a force in the Not-self opposed, but akin, to that which we exert (chap. xvii.). But, strictly, this analysis of the Object into sensation is more favourable to Subjective Idealism than to Realism of any kind; and it is more favourable to Crude than to Transfigured Realism, because to speak of the objective power as akin to our own is to diminish its unknowability. To illustrate his theory of Transfigured Realism, Spencer takes (chap. xix.) two symbolic cases: first, the perspective drawing of a tree-trunk, "in which along with extreme unlikeness between the symbol and the actuality, there is an exact though indirect correspondence between the varying relations" among their component lines; and, secondly, the image of a cube projected on a cylinder, in which the correspondences of lines and angles are even more complicated but still absolutely definite. Here the perspective drawing and the projected image of the cube stand severally for perception; the tree-trunk and the cube themselves, for objects of perception; and the comparison shows "how it becomes possible that a plexus of objective phenomena [*sic*] may be so

represented by the plexus of subjective effects produced, that though the effects are totally unlike their causes, and though the relations among the effects are totally unlike the relations among their causes, and though the laws of variation in the one set of relations differ entirely from those in the other: yet the two may correspond in such a way, that each change in the objective reality causes in the subjective state a change exactly answering to it—so answering as to cause a cognition of it."

Well, merely protesting against the unknowable entities being called 'phenomena,' and against the interpretation of perception by the category of cause and effect, what I have chiefly to draw attention to in this theory is, the conception of a correspondence between perceptions and states of Being beyond consciousness. Correspondence is a kind of likeness, here conceived as a likeness of relations of relations of relations, etc.; very remote and refined, but originating in, and (as Spencer has shown us) depending on, the simplest perception of likeness. A likeness, then, is asserted between our perceptions (ideas in Berkeley's sense) and things that are not and cannot be perceptions, nor in any sense states of consciousness; and, therefore, we must ask Berkeley's question: "How can an idea be like anything that is not an idea?"

§ 8. My own hypothesis concerning Reality bears a closer resemblance to these monistic doctrines than to any others; and of late years such doctrines have multiplied—Fechner, von Hartmann, Häckel—and may now be said to predominate in the speculative world. But no amount of authoritative support will console me unless I can give some answer to Berkeley's question: "How is it possible to predicate anything of that which is other than consciousness?"

My first position is that consciousness is Reality. But, then, it is not the whole of Reality; and we have seen that no metaphysical system has been able to avoid the assuming, or implying, of something else.

Secondly, consciousness is a factor of *all* Reality; because it cannot be derived from anything else; cannot be explained by its utility; and is manifested by all living organisms,

which participate in chemical and mechanical forces, and are hypothetically resolvable, like everything else, into protyle.

Thirdly, an organism's consciousness is not on a level with the organism itself; for the organism is a phenomenon in consciousness; but that in which phenomena exist is not a phenomenon. No doubt in Psychology, one may conveniently speak of processes of consciousness as phenomena; but metaphysical reflection shows that such expressions are for convenience only. The true correlation of conscious processes is not with the organism as phenomenon, but with the transcendent Reality whose phenomenon it is; and similarly with all lower grades of consciousness. This distinguishes my hypothesis from Hylozoism.

The notion of a relation between consciousness and something beyond is necessarily an imperfect one; for there can be no second term for the relation to take hold of: the category of Transcendence, like its correlative, Manifestation, is one-sided, or merely indicative or orectic. Nevertheless, since all metaphysical speculation points to transcendent Being, I submit, fourthly, that we may give this vacuum some body, or at least a skeleton, by transferring thither something from its correlative consciousness: namely—

(1) Time or, at least, Succession; and (2) Change: for these are the forms of all consciousness.

(3) Coexistence: for this is found even in subjective consciousness, and is the most insistent of all relations amongst material phenomena in space. But whether space-relations, a construction of the activity of consciousness, are predicable of the transcendent Reality, I cannot determine.

(4) Order, or uniformity, of change may be predicated of the Transcendent upon both subjective and objective evidence; and perhaps something equivalent to that which we know in phenomena as Causation (not between the Real and phenomena, but in the changes of the Real); but this with less confidence, because (as with space) the evidence is objective only.

That which is thus defined cannot be called "Subject," for that term is applicable only to its conscious activity. Nor is "Substance" a satisfactory name; for it suggests that con-

sciousness is an attribute and therefore a degree less real. "Soul" has the merit of meaning a conscious thing having also other characters; at least, in popular belief,—the only test of truth in such matters. Perhaps the most colourless name for it is the Transcendent, or merely Being.

But I do not care what it is called. Let us quit this Limbo where Anthêlios seems to reign, making darkness visible, and revisit the comfortable daylight, or (if you will) return to the old familiar cave with its cheerful bonfire.

CHAPTER IX

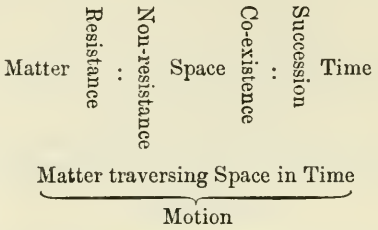
UNIVERSAL FORMS OF THE PHENOMENON: TIME, SPACE, MATTER AND MOTION

§ 1. The Universal is the philosopher's quest, his quarry; the more abstract anything is the more it fascinates him, and the more ardently he pursues it, like the Wild Huntsman, through the watches of the night. Hence the lustre and music of the World interest him less than Time, Space, Matter and Motion. These things have provoked his eloquence for ages; and the Schools have established a tradition of investigating certain problems concerning them that must never be interrupted. The being of Time and Space especially, has engrossed the imagination of philosophers and children: sages have toiled in vain to comprehend it; and youths have swooned, whilst the first excursions of their wonder sounded that bottomless abyss.

It was by a misleading abstraction that Kant signalised Space and Time as pure forms of experience. For, first, they are not merely forms, but are at the same time objects of experience; and, secondly, they are not pure, but have a sensational ground. Moreover they are inseparable in objective cognition from Matter and Motion. It is true that Time has a greater generality than Space, Matter and Motion, since it it is an universal form also of subjective Reality; but it is not cognisable as such until Space, Matter and Motion have been fully developed in consciousness.

The inseparability of these forms in experience appears in the attempts of psychologists to analyse them severally; whereby it is shown that the sensations on which all these

cognitions depend are those of movement and resistance, and that the relations involved in their genesis are those of succession and co-existence. The relativity of these data may be exhibited thus:—



The germinal experience is our own movement; though it cannot be known as such till all its latent contents have been differentiated.

None of these cognitions can have grown up without the others; and although they are not equally prominent in all objective cognition, and probably are very unequally developed in different species of animals and even vary amongst men, yet to attend to, or treat of, any one of them apart from the rest can never be a complete but only a quasi-abstraction.

I am assuming that the analysis of external perception given by Bain, Spencer and most English psychologists, is essentially sound; though a good many psychologists, such as Külpe, reject it as too speculative. For whilst I admit that the effect of the argument, as urged by Spencer or Sully, does not amount to conviction, yet reflection always increases my sense of its probability; and the failure of direct conviction seems to me sufficiently explained by the immeasurable antiquity of the organic preparation for these perceptions. It is unreasonable to expect that the growth of countless ages can be adequately unravelled and reconstituted in a few pages of reasoning that are read in half an hour.

Now if it is true that the cognitions of Time, Space, Matter and Motion all have their root in the same experiences, namely, in the kinæsthesis, or sensations of muscular contraction resisted and unresisted (with the correlative relaxations), and in the adjustment of limbs and eyes, and their sliding

from one adjustment to another (with the accompanying tactile and retinal sensibility); if this is true, the finished percepts, or concepts, of Time, Space, Matter and Motion can never be distinguished, compared and contrasted, without the danger of isolating in words and half-thoughts the things that are inseparable in Nature and experience. They are four factors of the same experience; discriminated factors of the same empirical Reality. Hence, moreover, such being the mutual implication of Time, Space, Motion and Matter, any concepts of them that are incompatible with this fact are bad concepts; or else any dialectic that seems to exhibit the concepts as incompatible with the facts or with one another, is mere eristic. It is indeed the natural sophistry of the analytic understanding to assume that distinct concepts stand for possibly separate existences; to treat the results of analysis as independent factors of creation. Then, what more reasonable than to treat Time or Space, or both, as existing in their own right, and to introduce Matter and Motion to them as if from outside? But any question as to their relations raised in this way, must be stated in such a form as to pester the answer. There is not the smallest reason to suppose that any one of the four, Time, Space, Matter, Motion, ever existed separately or was experienced separately, and it is a delusion to suppose that any one of them can be separately explained.

Kant says that Time and Space cannot be represented as non-existent, but can be represented as empty. The former clause is, I think, true; for though in some conditions even human consciousness may be so narrow and dark that neither Space nor even Time defines its content, this is not the deliberate suppression of Space and Time that Kant declares to be impossible. But as to our ability to represent Space and Time as empty, he is mistaken; for, even granting it possible to exclude the representation of all other bodies or images (which is not true), still our own body from which all Spaces radiate, and our present consciousness from which Time flows, are quite inexpugnable.

I have here used 'representation' as equivalent to Kant's Vorstellung; but for the ensuing discussion we shall need

terms to distinguish three modes or grades of cognition: (1) Perception—particular, concrete cognition; organised in experience and aroused by the stimulus of immediate sensation. (2) Imagination, derived from perception and having its concrete character, and sharing many of its limitations, but not dependent on present sensation, nor restricted to the scale of perception, nor to the order of perception in experience. (3) Conception, dependent on perceptions or imaginations for its contents; yet not upon any in particular, but on the comparison and analysis of many, and therefore not concrete but abstract. A concept may be sustained by an image taken in a representative character, or by a word, or other symbol: the representative character being preserved by definition. By operating with symbols the power of conception extends far beyond the limits of perception and imagination; and therefore, for the sake of sanity, it must proceed from perception, follow the analogies of perception, and return to it for verification. We have seen that perception is in general the ground of Empirical Reality; that conception is the means of completing and explaining Empirical by Physical Reality; that to be imaginable or intuitable in a representation is a condition imposed on any concept in order that Empirical and Physical Reality may form one continuum; but that to be perceivable or imperceivable, imaginable or unimaginable, conceivable or inconceivable, is no proof of Reality or Unreality in any particular case apart from systematic confirmation.

§ 2. Time, Space, Matter and Motion are all empirically real. Kant, however, when he says that Time and Space are empirically real, is inconsistent; for he also says that they are pure (non-sensuous) intuitions, and that sensation is the test of Reality. That pure forms may be empirically real, it is not enough that they should be excited to activity by sensation; and in fact it is as inconceivable that pure forms of intuition should be aroused by sensation, as that pure forms of judgment should connect sensations: if knowledge is to be one it must all grow together from one root.

The reality of Time is immediately known in the "psychological Now": every experience has a certain duration, some

seconds; but the 'how much' is variable and cannot be generally determined: every experience also involves a change or changes; and Duration and Change are the elements of Time. No experience is simple; it is a process whose phases blend and overlap, and this is the condition of the integration and comparison of experience. Human experience is at every reach of it an immeasurably complex process; the more you investigate it, the more you discover; for the brain acts as a whole. If, neglecting this basis of fact, we treat Time conceptually as a line divisible, the present moment becomes infinitely small, is inappreciable in experience as duration or change. The past has gone; the future is not yet; the present is incognisable: therefore the World is a nonentity. Such puzzles distress the youth of speculation, and reward the speculations of youth. But in the moment of true experience the whole of reality is grounded: the past is recorded as Effect and the future germinates in its Causes; and, therefore, to a sufficient intellect it carries the World *sub specie eternitatis*.

The reality of Time is known in the Now; but the comprehensive consciousness of Time is the vastest abstraction (if justly called abstract) of the human mind. As the form and enfoldment of all possible experience, it is another name for the Universe in its everlasting movement. For as there is but one Universe and one process, Time as a whole cannot be considered apart from its actual contents. Hence the true character of Time is disguised by the methodological device of treating it as of one dimension, representable by a straight line. This can only represent the lapse of Time by an image of duration (no matter what it is that endures). But Time beyond the Now has no duration; and even there it is consciousness rather than Time that endures; for it reposes on the universal process. This process, again, is co-extensive with moving bodies in Space of three dimensions. Time, therefore, comprehends the height and the breadth and the depth of the galaxy, and something more, the life and mind of all that world.

It may also be a convenient fiction to treat Time as made up of moments; but in experience all moments are fused in

the continuity of movement. Moments are occurrences in the course of time and are marked upon a background of obscurer changes. Nothing can be less like our consciousness of Time than a series of moments. It is indeed probable that the accents of attention (sensations of adjustment) help in defining for us the process of Time by giving a subjective measure: the fixation of attention takes about three-fourths of a second, and this is the period of which our subjective estimate is most exact. But the point of attention is neither the whole of consciousness nor the sole determinant of its growth: it is a selection within consciousness, and all that lies about or beyond to the most obscure marginal sentience (and, no doubt, still farther) has its influence and its registration. Hence Time, as the form and content of all experience of movement and change, is the whole mass of consciousness; but since in the Now, or in any given lapse of time, the contents of experience continually vary (for even the accent of attention is of unequal intensity and is sometimes suspended), a concept of Time has been developed having no particular content, but as a "quasi-blank form" of any possible content. And this, I suppose, is Kant's pure form of intuition.

The perception of any particular time beyond the Now is vague, because it is one-sided; I mean that its sensation-element lies in the Now from which we measure, whilst at the other end of the period there is only a memory, expectation, or representation. The perception of a space, or body in space (which comes to the same thing), is supported by sensation in the Self measured from, in the object of regard, and in others on every side of the line of vision: it has, therefore, a high sensation-vivacity. But the most distinct personal memory is supported by sensation only in the present; the fact remembered has only an idea's vivacity, which faintly illumines neighbouring objects, but leaves dark the intervening hours or years.

The vagueness and subjectivity of times perceived or remembered makes them hard to measure and arrange. So to measure them we turn to things external and take the motion of some body as a constant; then construct a calendar and

insert in it our own history, and are apt to think we remember the order of events when in fact we read them there. Without a calendar, the best way of arranging our past life is by reference to our movements and where we have lived, for this is the best clue to causation. Although Time may be primarily subjective, the human idea of it is developed by means of objective experience and by need; yet it now far transcends any need we have for it. In animals who have little need of memory and foresight, the development of the perception of Time is backward in comparison with Space, Matter and Motion. And this seems also to be true of children; still even in them the sense of Time is so far developed before the rise of self-reflection, that it is known as that in which we live and not as our invention. And though less clear and distinct than Space, Time is more comprehensive; for Space is only the form of phenomena, but Time of all consciousness; and therefore it is more real than Space, because consciousness is Reality. Nothing, therefore, is more preposterous than the notion of a *nunc stans*: which, in fact, is the mistaking of Space for Eternity. Such is the penalty of manipulating concepts in contempt of experience. But the comprehension of Time by man, transcending all utility, belongs to the World's self-knowledge; and, I suppose, the dimness of our comprehension is the still unlifted veil of that knowledge.

§ 3. The reality of Space in experience is given primarily in sensations of movement, which in the development of perception come to be signified to us by every touch, by every limb-adjustment, by every eye-adjustment, and hence by every coloured expanse; nay, further, by every focussing of the eyes upon a point that yields no retinal sensation, and by every experience of not touching, for this (though less attended to) is as real an experience as touching is. But it may be said, if Space is real, what sort of reality is it? It is not Substance. No: but we must not assume that we have already named every Category that is needed for thinking Reality; any more than that all the Categories we name have a correspondence in Reality. Space is not Substance; for the fundamental attribute of empirical Substance is resistance,

and this is the opposite of Space. And yet it has an attribute, of which it may be said to be the subject; for as the defining attribute of Matter is resistance to movement, so that of Space is non-resistance, known by freedom of movement; and this is quite as positive as impeded movement. I say non-resistance is the attribute of Space, for it is not the same thing as Space. Space is a construction, or rather a mental organic growth, to which other experiences, tactile and visual, contribute; and the product is not the same as any of its elements or even all of them together. It is something known on occasion of them, most vividly by movement.

As this growth is complete before the rise of self-consciousness, it is empirically objective, and, like Time and the material World, something into which the self-conscious individual is born. Hence the natural man laughs when he hears of Kant's doctrine that Time and Space are (transcendentally) subjective forms of intuition. But in my opinion Kant did not really mean that they were forms of merely individual intuition, but of the universal Knower in Nature; though the misunderstanding is Kant's own fault, not only by bad statement, but by not clearly conceiving what he meant: influenced perhaps by the Cartesian innate ideas.

It may be asked whether, then, Kant was wrong in arguing that, since every sensation has degree, empty Space, a vacuum, cannot be proved from experience (*Anticipationen der Wahrnehmung*); because the kinæsthesis has degree, and this is the essential condition of the perception of Space. But we must consider that empirical Space is not empty, but filled with ether (according to current hypothesis); which, however, offers no sensible resistance. An ether-vacuum cannot be obtained; and if it could be we might discover that movement of a body as a whole is impossible in such a vacuum, because any body entering it would instantly turn into ether, and therefore, as a body, could move no farther. The kinæsthesis or sense of our own movement, therefore, is conditional upon Space not being empty. I know not what a physicist would think of this speculation.

There is no perception of pure Space, but only of spaces

variously bounded by (or measured from) bodies at different distances and directions in a variously-coloured patchwork, or in an active-tactile exploration. The differences of colours, adjustments and movements being abstracted from our perceptions, there remains what is common to them, the concept of pure Space, which Kant mistook for a pure intuition. Kant was unfortunate in every way: first, in denying the conceptual character of pure Space; secondly, in supposing pure Space to be the object of Geometry, which treats of determinations of Space; and thirdly, in supposing that Geometry treats of intuitive Space, whereas in intuitive Space no determination satisfies the conditions of pure Geometry. Clearly Geometry in treating of points, lines, surfaces, etc., and their relations, deals with abstractions from experience of the determinations of Space, conceived as existing in a Space similarly abstracted from experience.

Space as perceived has three dimensions, and is so conceived by Euclid and his followers; but that it may be conceived as having four, or more, is a liberal paradox. Granting Space in four dimensions to be conceivable (that is, definable), whether it be real or not in any other sense Heaven knows: we shall never know in this life; because the matter in such Space can never influence our experience. Just as surface is not a physical but only a geometrical property of Matter in three dimensions, and therefore our Matter can never disturb the inhabitants of a superficies; so three dimensions constitute no physical property of Matter in four dimensions, and such Matter can never intrude upon us; because in our Space it would be destroyed by its own definition, annihilated by its own essence!

Whether all Space is really curved, so that it is impossible to draw a straight line in it, seems to be a physical question. Does the assumption of curvature facilitate the solution of any physical problem? Does the assumption of straight lines ever give rise to appreciable error within the limits of calculation and of verifying by measurement? We cannot determine this by reference direct to Empirical Reality; for within such limits the measurable segments of innumerable curves might

not differ from straight lines. As to the further speculation that Space may not only be essentially curved, but even change its curvature with the process of Time, and that this may be the truth of Motion; abstractly considered, this is conceivable, because Motion is a traversing of Space in Time, and it is a mere translation of this to consider Space itself as changing in Time. But turning to the experience of many bodies traversing adjacent spaces at different velocities, to conceive of this as a wriggling of Space itself is painful to a sympathetic mind. And, to avoid hypocrisy, I must confess that to me these speculations have an air of belonging to the play rather than to the work of Reason. Still, play may be serious enough, and Nature shows that it is the best preparation for work, and this is the best excuse for many shelves of Philosophy; and, to be sure, there is time enough to be all in earnest, and there is posterity to fall back upon.

§ 4. Time and Space then are real, and in Chap. VII. we showed in what sense Matter is real in experience; and since Motion is nothing else than Matter traversing Space in Time, this too is real. We next take up the problems of infinite divisibility.

Our immediate perception of the Now, the Time-process, is, of course, not infinitely divisible; in other words, in the psychological Now there is a *minimum sensibile* (for sound $\frac{1}{500}$ sec.); so that if the Now lasts 6 seconds, it comprises 3000 *minima*. But conceptually Time is infinitely divisible; because, taking any unit in experience, we may apply the symbolic system of numeration and divide *ad libitum*, or save ourselves this trouble by an algebraic sign. And the use of this device as far as may ever be requisite is justified by the appalling calculations of physical science concerning the movements of atoms and ether. Moreover, since such movements affect our organisms they must our minds, and we may reasonably regard the *minimum sensibile* of the Now as having been, in our own and ancestral experience, subliminally divided according to the minutest differences of Nature: an infinite division is not required. Whoever supposes that the mind cannot be affected by less than the Empirical *minimum*

sensibile, should consider the organ of Hearing, how it counts and multiplies and does sums in proportion, as if it had an over-mind of its own. But even the minutest sensible differences are not to be treated as moments constituting Time, for they are events in Time, and are fused together in Time by the continuity of Motion and Experience. The discontinuity of Time is inconceivable, not because there must be an interval of Time between any two moments, but because each moment would then be an origination and cessation of existence. There would be no Time and no Understanding.

In perceptual Space there is a *minimum sensibile* (for the retina ·005 mm.). But conceptually, of course, any unit measure of Space may be divided *ad infinitum*; and the smallest part, considered as Space, contains the conditions of all Geometry. And, as in the case of Time, the use of this device as far as requisite is justified by the calculations of physical science; and it is futher justified by the discovery of space-relations which are incommensurable except by reference to an infinitely small unit. Nor would it be reasonable to regard the immediate perception of our minds as a standard of Nature, seeing that all our perceptions are immeasurably compounded in correspondence with our bodily organisation.

Nor, of course, does Space consist of distinguishable minima or points, whether in the visual expanse or in eye-and-limb adjustments, for all such points are fused by the continuity of movements. The discontinuity of Space is inconceivable, not because there must be an interval of Space between any two points, but because we should find an immeasurable and impenetrable barrier between them. The movements of primary importance in the cognition of Space are, doubtless, those of our own (and ancestral) limbs; which, extended to all practicable distances and turned in all possible directions, have carved out that geometrical character of Space in which the human mind seems to be exploring its own infinite resources. But in experience the exploration of Space is relative to bodies that occupy and determine it: for it happens through the movements of our own body or limbs,

sometimes leading to contact with other bodies, sometimes swinging free.

Space, therefore, is not known as relation without terms; for bodies in Space are terms in the experience of space-relations; and even when the arm swings free, the relation perceived is not without its appropriate term, for there is special sensation in the finger-tips when they do not, as truly as when they do, touch a body. And further experience shows that the tingling absence of contact is a sign of possible further movement, which again must be imagined to end either in contact or not. Similarly the focussing of the eyes on an unoccupied point has its own sensitive registration. But, again, since the same movements and adjustments have under different conditions different results, it becomes possible to conceive of Space apart from any particular perceptions, and to study the relations of distance and direction from any points assumed. For, by the way, distance and direction are the fundamental relations of Space, or of points in Space; not relations in the abstract, of which to be sure there could not be parts; but distance and direction are defined by lines and angles, and of these there may be parts.

Body is known as occupying Space by its offering resistance to pushing and grasping. When a moving limb explores a greater or less extension, and all the way its tactile organs obtain continuous stimulation, a muscular contraction that intensifies the tactile sensation at any point has a certain quality of strain in contrast with the sliding ease of those muscular contractions that lessen, or put an end to, the tactile sensation. Body being extended, then, it is conceived to be, like Space, infinitely divisible; that is to say, geometrically considered, it is infinitely divisible. But whether it is so in fact, considered physically, is entirely a question for physical science. It is in vain to say with Descartes, who identified Body with Space, that whatever is extended must consist of parts; for whether every Body has physical parts is the very question at issue. To say that whatever the force of its coherence, a greater force is conceivable, which may, therefore, break it up, is to commit two fallacies. For, first, to speak of

its coherence is to assume that it has parts that cohere, the geometrical conception is slid into the physical question. And, secondly, the assumption is made that if we can conceive a force capable of breaking up a given whole, such a force in fact exists; and there can be no worse prejudice. There may, therefore, be physical atoms: the existence or non-existence of atoms is to be determined by scientific method in the conceptual interpretation of experience.

Even if it should be shown that a chemical atom consists of ether, it would not follow that it consists of parts, unless it were shown that ether itself consists of parts; and if this should be shown, the question would return as to the ether-atom (the physical as distinguished from the chemical), whether that consists of parts. Similar reasoning holds good of the electrons, of which chemical atoms are now supposed to consist; whether electrons be ultimate and indivisible, or, again, condensed ether. That if the chemical atom consists of ether or electrons, its distinctive character is conditional and may be temporary, has hardly any metaphysical significance.

Since Motion is a traversing of Space in Time, it is conceived to be infinitely divisible; that is to say, there is no limit to the smallness of the Space that may be considered as traversed, nor to the smallness of the Time that elapses in the traversing of a given Space. Such conceptions are easy symbolical extensions of Empirical Reality, and are justified by the verification of physical calculations.

§ 5. It remains to consider whether Time, Space, Matter and Motion are finite or infinite in duration or extent. This question is often argued upon the ground of what we can imagine or conceive. But imagination depends upon empirical perception, and as the untutored mind often perceives Matter or Motion originating or ceasing, there is no difficulty in imagining it. Nor, it seems to me, is there any difficulty in forming an isolated concept of the beginning or ending of things. But how does all this affect the question of fact? When for empirical we substitute experimental perception, the beginning and cessation of Matter and Motion is no longer perceived, and to scientific investigators (I understand) it

ceases to be imaginable; and the conception of it is in contradiction with the principles of scientific explanation. If the principles of the persistence of Matter and Energy be admitted, and extended throughout the stellar system, on the ground that some at least of the chemical elements exist, and the laws of mechanics and physics prevail, in remote stars; and if it be acknowledged that explanation consists in the discovery of resemblance, especially in causes, and that equality of cause and effect in all changes is the most complete explanation; it follows that the everlasting existence of the World and its everlasting movement are necessary concepts.

It is merely the logical obverse of this doctrine that in the phenomenal World a First Cause is inconceivable; and that any suspension or interruption of the order of equivalent changes is inconceivable. It is true that, for the same reason, the explanation of the present World can never be complete, because the regress of causes can never be followed to infinity, and no unconditional beginning can be found in the infinite series. It is also true that within the period during which the World is known to have existed the series of events is still very imperfectly articulated in thought; many things—of which perhaps the origin of life is the most interesting—are not understood. And some minds are so constituted that whenever they are unable to explain an event by natural antecedents, according to the usual principles of explanation, they feel no difficulty in referring it to an extra-mundane cause. Sometimes it is even said that science itself points to such a cause; but that is impossible. Whatever the shortcomings of scientific inquirers, the ideal of science can never require any explanation for anything, except equivalent antecedent phenomena according to a law. Not appreciating this limitation, those who appeal to extra-mundane causes do not take enough pains to make clear the principles of their reasoning. Unless they state in precise terms (1) the marks by which we may know that an event not yet explained is essentially insusceptible of scientific explanation, and (2) in what sense any extra-mundane power can be a cause, or can be the ground of explanation according to any analogy of

experience, although their authority may weigh with those of us who must rely upon authority of some kind, they will hardly convince the more reflective part of their fellow-creatures. An exact treatise on the *Logic of Extra-mundane Inference and Explanation* is still a desideratum.

If an infinite regress of the World's movements is required by the principles of explanation, so of course is an infinite Time. It happens that a finite Time cannot be imagined, because it is never perceived: since in experience every movement follows, and is followed by, others. But, on the other hand, an infinite Time cannot be imagined: like perception, imagination can only proceed to a given point and beyond it. The imagination of Time is indefinite: to follow the regress of movement to infinity requires an infinite Time in which to accomplish it. But infinite Time may be adequately conceived as exceeding any assignable limit. For this is all that is required by the principle of explanation, that to whatever point the history of the World may be traced back, it remains to investigate the cause of the state of things then existing.

§ 6. In Space it is our constant experience that wherever we go, there lies Space beyond us; hence we cannot imagine limits to Space. On the other hand, we cannot imagine it infinite, for want of time to complete the exploration. Space may be conceived as infinite or exceeding any assignable limits, and Motion will then be conceived as having the same range. And although it is often denied that Space can be conceived as finite, I do not see any difficulty, if we do not confound conception with imagination. The conception of a limited Space implies a limited range of Motion. The concept of infinite Space is not, like infinite Time, required by the principle of explanation.

That Matter exists in Space is proved to us by our grasping, circumambulation and circumnavigation of things, and by Astronomy. It follows that if Space is limited so is Matter; and if Matter is infinite in quantity, Space must be infinite to contain it; but if Space is infinite, Matter may still be limited. The prevalence of a belief in the boundlessness of

the material World (except amongst the Epicureans) seems to be modern. But, recently, the evidence has been interpreted as indicating that Matter is a limited quantity, and attempts have even been made to weigh the Universe.

Whether the World is finite or not has some metaphysical interest. For supposing the atomic World to be finite and the ether infinite, it must, according to the principle of the degradation of Energy, run down in a finite time; and therefore, contrary to the principle of explanation, must have had a beginning, in the sense that no known laws of phenomena will explain how it began to work. But if the ether is finite as well as the atomic World, there may be a limit to the dissipation of Energy, and after that has been reached the Universe may recover itself, and pulsate through infinite series of evolutions and dissolutions. If the material World is infinite, it can never run down. If Space is finite, so is the ether; but if Space is boundless, the ether may still be a limited whole in the midst of it—unless subject to some law of expansion and interminable diffusion which I have not seen mentioned amongst its versatile properties. The whole problem is essentially physical, and to attempt a metaphysical solution of it *a priori* would, in my opinion, be ridiculous. Still, it is a problem upon whose solution the principle of explanation is staked, and Metaphysics is indirectly concerned in it. Should the progress of physical inquiry make it appear that Space is limited, it would at the same time accustom the imagination to follow it; for proceeding from experience, and following the analogies of experience, the inquiry would itself give experience of a limit without a beyond.

§ 7. The nature of Time, Space, Matter and Motion, as at present understood, presents no necessary limit to the elaboration of Positive Philosophy. The foregoing discussions treat of the problems which Kant, in his criticism of Rational Cosmology, sets out in the form of Antinomies of Pure Reason. Reason, he says, in endeavouring to explain the World, falls into a dialectic within itself, because it assumes that the conditioned phenomena of experience indicate an Unconditioned Cause or ground; and its dialectic leads to contradictory

conclusions because, as no such Unconditioned is given in experience, but only as an Idea, there is no intuitive basis of all the logomachy.

The Antinomies may be abbreviated thus :—

I. The World has a beginning in Time and limits in Space.	The World is infinite in Time and Space.
II. Everything is either simple or composed of simple parts.	There is not in the World any simple substance.
III. Causality through freedom, as well as by natural law, is necessary to explain phenomena.	Everything happens according to natural law.
IV. A necessary Being exists as part or cause of the World.	There is no such necessary Being.

Now, any one who reads through these propositions can see that no Unconditioned Cause is assumed except by the first, third and fourth theses, and that these three have the same meaning. The antitheses are nothing but dogmatically expressed principles of empirical Methodology; namely, that no limit to analysis is to be assumed, and that all investigation presupposes uniformity. Therefore, the whole imposing criticism of Rational Cosmology—the origin of the problem, the strife of Reason, the critical solution—is groundless. It is not Philosophy but literary invention. De Quincey observes that Kant's writings belong not to the literature of knowledge but to the literature of power. Kant saw that "human reason is naturally architectonic," and he essayed to gratify this instinct by a prodigious exertion of constructive genius akin to the faculty of Titanic artists. He explains nothing, but he is deeply affecting. Both the architectonic instinct and the impulse to gratify it, no doubt, prognosticate the future development of knowledge.

Kant next discusses the interest of Reason in the Antinomies: if we must take sides, which set of propositions should we desire to see victorious? First, there is a practical interest in favour of the theses; because, that the World has a beginning and depends upon a necessary Being, and that the

course of the World is determined not only by natural law but also by free causality—these are the grounds of religion and morals. Secondly, there is a certain speculative interest on the side of the theses; for if there was a beginning of the World, and if every compound consists of simple parts, we may hope to carry our investigation of Nature to an end and complete our scientific system. And, thirdly, there is a popular interest on the same side; for the vulgar mind would gladly see speculation finished and done with. Besides, in the dogmatism of Reason (so Kant calls the theses) the vulgar find themselves on a level with the learned; have indeed this advantage, that the philosopher feels some qualms, but the vulgar none at all, in accepting the incomprehensible. Hence, he says, the antitheses of Empiricism, demanding exact thought and endless labour, will never prevail outside the Schools or find favour with the crowd. For the speculative interest of Empiricism lies in this very fact, that it knows no limits to the exploration of Nature; whose laws it may trace with certainty, dealing with the facts themselves in perception, or with conceptions that can be verified by distinct percepts. Such an attitude of mind is incompatible with the expectation of finding a beginning of the World or any breach in its order. But, therefore, it is contrary to the practical interests of morality and religion: "If there is no Urwesen distinct from the World; if the World is without a beginning and therefore without a Creator; if the Will is not free and if the Soul is, like Matter, divisible and perishable; moral ideals and principles lose all their validity, and fall along with the transcendental Ideas which were their theoretical buttresses."

It is impossible to find in literature a more desperate sentence than this, or a more false. It is false that morality or religion depends upon the dogma of creation. It is false that morality or religion depends upon the dogma that the will is exempt from natural law. That there is any opposition between empirical science and morality is false. Happily too: for is it not plain that science is what every one now trusts, and believes in, more than in anything else? And what can be more pernicious to human life than to put

morality in conflict with men's convictions? Yet in sympathy with Kant's most unhappy delusion, persistent attempts are made to disparage the sciences; not merely by necessary criticism, but in the spirit of scepticism for the sake of faith: a fatal error! For faith is always born of faith, and scepticism has no offspring but scepticism.

BOOK III.—PSYCHOLOGY

CHAPTER X

THE SUBJECT IN EXPERIENCE

§ 1. Having arrived at the early maturity, or prematurity, of Reason, Man finds himself amidst a world of which he is indisputably the head. The earth is covered with his works, his cities and possessions, his empires. That other things about him are conscious and even intelligent, serves only to emphasise his superiority. Glancing down over the ranks of living things and seeking for the widest and most decisive difference between himself and them, he defines himself the "rational animal." Long ago he recognised the other animals as his kindred; then he doubted and even denied their claim to relationship; now he acknowledges it again, but is loath to draw any inferences from it, except to excuse his own vices, or to find fresh grounds for self-satisfaction.

But he has long been accustomed to believe in another sort of kindred: even other men who have left their palpable bodies and become impalpable and invisible, except sometimes at night when the conditions are least favourable to distinct vision. These others, the doubles, shades or ghosts of men, once had a world of their own much like ours, and their life there was something entirely natural and matter of course. As they had not wholly lost their interest in our world, nor forgotten their former affections, antipathies and fixed ideas, the neighbourhood of their viewless world, which might at any moment invade our own, became a disturbing but also a restraining power over men's actions. As human society developed and division of labour, rank and government were established, a parallel development happened in the kingdom of the dead; and in

the great religions those kingdoms attained a power and exaltation far above all fleshly rule; supernatural and divine, overwhelming imagination with wonder and awe.

Man's relationship to this unseen world became an absorbing interest; and since rank was there distinguished by intelligence as well as by power, the dignity of his rational nature was enhanced; whilst his animal nature was degraded, until the body, as seat of the animal nature, became the prison of the soul, or a wild beast, or a corrupting corpse to which the soul was unwholesomely fettered. The reward of the religious life was honour there and the expansion of reason; of the irreligious the reward was degradation to a brutal life and the obscuring of reason, or else to a shameful life in the dungeons of demoniacal wrath amongst the "dejected and downtrodden vassals of perdition." As the unseen world was more lasting, more powerful, more vital and comprehensive than this one, so it was more real; and therefore the shade or soul that should dwell there was more real than the body. Hence when ontological discussion arose it was easily decided that, since the most real things are called substances, the soul must certainly be a substance.

In modern cities men are safe, busy and prosaic. Gradually there grow up systems of thought and habits of thinking that readily assimilate positive interpretations and exclude the mythological. The interference of things unseen is no longer traceable; and, unsupported by either experience or utility, the too elaborate structures of celestial and diabolical tradition disintegrate and fall by their own weight. At first slowly, then rapidly, the ancient beliefs lose form and content: their imaginations become unimaginable; the supernatural, unnatural; the wonderful, merely perplexing. In the history of Philosophy the change came late, but very suddenly. At the end of the seventeenth and beginning of the eighteenth centuries, Locke and Leibniz still speak of angels as familiarly as we do of pterodactyls, and then they are no more heard of. But man is still defined as a "rational animal," and the soul, under the name of the conscious Subject, is still generally assumed to be a substance.

§ 2. Approaching the study of life and mind from the side of Physics, we find Consciousness, the essential character of the Subject, a sort of mystery; it is like nothing that has hitherto been met with, and therefore wants the ground of explanation. As Huxley says, the rise of consciousness after the stimulation of a sensory nerve is as mysterious as the appearance of the Djin when Aladdin rubbed his lamp. Not only on the strictly mechanical, but on any physical theory—even admitting mechanics, chemistry and vitality, to be ultimate and irresolvable processes—consciousness seems a useless 'extra'; and a thinker may pose himself with doubts whether he has any right to think before he has explained how thinking is useful or possible. As Subject, he is told that he is an epiphenomenon, a secondary, accidental and rather inconvenient result, a sort of by-blow or parergon of the play of molecules constituting the real phenomenon, his body, especially his brain, most particularly the grey matter of his cortex. To protest that he is indeed there, places him in the ridiculous position of poor Partridge after the *Examiner* had announced his funeral. Nevertheless, since to trust the conceptual system of Physics apart from Empirical Reality, is to cut off the bough on which you sit, it is necessary to return to the security of primitive fact; and there the Subject recovers his rights. Whilst the reality of the Object is in my opinion not seriously disputable, still, even if it is, at any rate the reality of the Subject is not disputable at all: it is conceded even by mechanical engineers.

Consciousness being real, why from the side of Physics should it seem inexplicable? Because it is not regarded as a mode of energy in correlation with those modes that Physics investigates; and if this is true, a living body may be conceived to go through all its changes and discharge all its functions without the aid of consciousness. Consciousness, therefore, appears as something detached, otiose, and useless. As detached, it has no value in the equations of change through which matter and energy pass in the evolution and dissolution of animal bodies. To take account of it spoils the equations; for with life, or at some stage of life, consciousness

is manifest, and yet there is no traceable antecedent; so that the principle of continuity, in the form *ex nihilo nihil*, seems to be violated. Again, as useless, consciousness is equally inexplicable by the biological theory of Natural Selection, according to which every organ and function of an animal is, or has been, useful to it (allowing for possible "correlated growths"). Here also, then, no antecedent can be traced. So it seems to follow either that consciousness is really a mode of energy, or that the principle of Causation and Continuity is not true. There are, however, three other suppositions: (1) that consciousness is created when it first appears in animal life; (2) that it is due to a soul which at some stage of evolution is united with the animal body; (3) that consciousness is universal in Nature, inorganic as well as organic, and that its special manifestation in organic life is a correlated growth of the organisation.

Of these suppositions (1) and (2) involve many considerations that lie outside the scope of the present volume. Here, however, we may say that the concept of absolute creation *ex nihilo* can never be an explanation of anything, because it is not like any known process; so that if it should appear that Religion requires such a concept, nevertheless, it cannot find a place within any philosophical system. Some points connected with the notion of a soul—namely, substance and personality—we shall presently discuss. Meanwhile it may be observed that supposition (3), that consciousness is universal in Nature, allows us to understand that all equations of change in the redistributions of matter and transformations of energy may be treated without error in terms of those things that are measurable; whilst at the same time the equations are satisfied by corresponding values of consciousness on each side of them; though these cannot be precisely measured and are only known to us as accompanying certain changes in our own organisms: and further to understand that, if in the activities of our organisms consciousness cannot be shown to be specially useful, that is (as we have said before) because it is universally necessary.

It may be asked—Why universal in Nature? Why not

rather as accompanying the activities of those elements that enter into organic life—H, O, C, N, S, P, etc.? For by no means all the elements are concerned: man is not in this sense a microcosm. Phosphorus especially, it may be said, has been thought the essential condition: but the evidence of its special relation to consciousness has (I believe) been overstated. And as to H, O, C, N, it does not follow that, because they have the character that best fits them for organisation on this planet, they are therefore the sole conditions of consciousness, or even of organisation. And if all elements have a common ground (ether or protyle) it is more reasonable to look to the activities of that as the concomitant of consciousness than to any special groupings of it; and if consciousness exists there, it may be supposed to exist in the activities of all the elements that have arisen from that common ground. It would, however, be more correct to say that consciousness accompanies the activities of that of which the elements, ether, protyle, are phenomena; for all phenomena have their Reality by existing in consciousness.

§ 3. Now it is certain that consciousness exists in many degrees of fulness and intensity, several of which are known to us. First, there is discursive thought with the infinite variety of ideal and emotional life which we consider to be distinctively human: and this we may call self-consciousness or apperception. Secondly, there is the narrower region of perception, activity and feeling which we share with (at least) the higher animals: it is a state of mind which incursions of the higher powers perturb and hinder, the state in which a man plays billiards or a dog noses about for rabbits. Both these degrees of mental activity in their greatest efficiency are characterised by the attitude of attention, in which consciousness is focussed. But, thirdly, in contrast with such 'focal,' there is 'marginal' consciousness (to use Lloyd Morgan's pregnant terms), the much greater volume of sensation and feeling which is present in consciousness without being attended to, sometimes seems struggling to attract attention and sometimes succeeds, and is always ready to become more lively and prominent whenever attention relaxes or wanders.

Then, fourthly, there is (as it seems to me) a far vaster region which rarely comes into distinct consciousness at all—*petites perceptions*—which may sometimes be discovered experimentally or by trained introspection, is sometimes made known in abnormal or diseased conditions, is sometimes only hypothetically discoverable (such as the elements of sensation integrated or fused in the perception of space, in an emotion, in the cœnæsthesis): and this I propose to call sentience.

So far we have modes of consciousness and sub-consciousness that are all in some sort known to us as entering into or profoundly affecting our lives, and of which the more obscure are believed to be shared in some degree by lowlier organised animals even down to the simplest forms. I do not mean that these grades of consciousness are mutually exclusive or exactly defined. On the contrary, the higher grades depend on the lower and consist chiefly in the co-ordination of them; and within each grade, again, finer distinctions might be made. In sentience, especially, it is impossible to say how many degrees there are of faintness and indistinctness. Perhaps Binet, in his *Psychology of Micro-Organisms*, has exaggerated the variety and definiteness of their consciousness; and similarly Wundt, when he says in his *Outlines* (§ 14) that "the movements of the lowest animals are all evidently simple volitional acts." Lloyd Morgan, in his *Animal Behaviour*, is judiciously sceptical: whether a certain process in Paramecium is accompanied by sentience, he says, we do not know. "That it is controlled and guided by any consciousness in the cell is most improbable" (p. 13). The "profiting by individual experience is the criterion of the effective presence of conscious guidance and control" (p. 31). But this means "the influence of certain nerve-centres which have for their concomitant what we have termed effective consciousness" (p. 51). So that in no case is there a question of anything but concomitance of consciousness: its degree varying with organisation. Whoever grants consciousness to the new-hatched chick but denies it to the new-laid egg, can only excuse his rejection of continuity by some device for conjuring a ghost into the chicken.

But, again, the simplest forms of life are indistinguishably

animal or vegetal; and if the least organised plant life is indistinguishable from animal life that is admitted to be conscious, it is arbitrary to deny consciousness of such plant life; and, if so, it is still more arbitrary to deny it of more highly organised plants. This may offer some excuse for those poets who, like Shelley and Wordsworth, have believed in the sentiency of flowers and trees. But evidence of it, or at least strongly suggestive matter, may be found in the phenomena of irritability, contractility and purposive movement exhibited by plants. These ideas have been entertained by many botanists and biologists since Darwin published his investigations into plant-movement. Plants possess what may be most naturally called sense-organs in relation to gravitation, contact, light and perhaps other stimuli; these organs seem to have developed like those of animals from the epithelium; and their stimulation excites reflexes, which, according to Francis Darwin (*Nature*, Nov. 1901), are of the same type as action in animals by association, and therefore allied to habit and memory.

Having got so far beyond the range of human sympathy as the level of plant-life, the principle of Continuity carries us further and points to some actuality even in inorganic Nature corresponding with animal consciousness, however vague and undifferentiated. Of course, we cannot imagine what it is like. The feeling of movement, energy, striving, which we commonly read into the operations of Nature, is with us a specialised sensation having its own organs, peripheral, afferent, central. There is a natural hesitation to ascribe consciousness not only to things that have no nervous system (for this is not traceable lower than the Medusæ) but even to those that have not the special form of matter from which nerve-fibres and ganglia develop, such as we suppose to exist in simple animals and plants.

But perhaps ere long it may be shown that the differences between the organic and inorganic are much less than we are now accustomed to assume. J. C. Bose, in his *Response in the Living and the Non-Living*, after showing that under electrical stimuli plants exhibit fatigue, etc., and are affected like animals

by anæsthetics and poisons, goes on to prove the same properties of tin and platinum wire. These also become fatigued; there is a threshold of response; subliminal stimuli become effective by repetition; response increases with the intensity of stimulus up to a certain point at which another limit is reached; response is affected by temperature, and the median range is most favourable to it; some substances act as stimulants upon tin and platinum, others like anæsthetics, others as poisons (destroying all response); a small dose may increase the response, and a large dose of the same agent abolish it. The resemblance of these results to some of those obtained in Physiological Psychology is obvious.

Inorganic matter is much simpler than organic, and so is its molecular activity; the simpler an organism, the simpler its consciousness; hence no doubt inorganic consciousness is the simplest of all. If it be true that one organic cell may comprise 300,000,000,000,000 atoms; and if it is difficult to imagine what the consciousness of a cell can be like, compared with our own; the consciousness of an atom must seem to us to be pretty near the vanishing point. But so is the magnitude of physical atoms and of some ether waves at the vanishing point. By the standard of customary ideas, all physical speculations seem monstrous and maniacal. I make the very reasonable request that the same possibility of infinite refinement should be recognised in consciousness, as already has been acknowledged in the case of "gross, dead, brute matter," as it used to be called. Whoever refuses this, ought to say whether he denies the principle of Continuity, or knows of some magic by which a ghost is conjured into every organic cell.

It is true that the characteristic of our own consciousness is relationality: *petites perceptions* are only knowable when occasionally they come into relation with the larger masses of our experience, and the most convincing ground for believing that our minds correspond with our nervous systems is the manifest fitness of these systems for carrying out the relational processes of our minds. But if from the analysis of our own minds we infer that consciousness can only exist through the continuous relation of its elements, it is impossible to explain

the beginning of consciousness in organic life; or in any individual, unless it be said that such consciousness is transmitted by germs in virtue of their predisposition to develop a nervous system; or on awaking from sleep, except by maintaining that we are apperceptive all night without being aware of it. But how many people would rather maintain a contradiction than follow an argument!

If the ether be that from whose activities all things arise, its psychoses have an inexpressible simplicity, purity and calm —invidious to contemplate: having the best claims of anything to the whole list of predicates that have always been ascribed to the Absolute—one and the same, universal, unchanging, self-active, everlasting and supra-substantial. We cannot indeed, at the present stage of our argument, regard this absolute consciousness as a Subject; for subject implies object, whilst consciousness (as such) does not. Consciousness is not necessarily a knowledge of something else; that contrast arises with the increasing volume and differentiation of organic minds; though even we, in spite of our highly specialised growth, sometimes pass through experiences during which the distinction of subject and object is nearly, or entirely, lost. But even the denial of subjectivity to the absolute consciousness need not be resented; it is a condition of limitation, opposition and of all pain: and, therefore, it is no compliment to the Universal Ether to insist upon calling it "Subject" after the model of ourselves.

§ 4. According to this hypothesis of the universality of consciousness in Nature, it everywhere accompanies the movements or activities of that which is manifested to sense-perception and which, conceptually, is figured to exist as atoms and ether, but which itself is necessarily transcendent. On the other hand, each human Subject at least is still regarded as a Substance. Every one knows that Descartes defined the Self to be a thinking Substance, and how many later philosophers have discussed that position of his. I shall have to return to it in the next chapter on the Ontology of the Subject; but here it is necessary to consider whether the Subject is Substance, or how far it may be considered so, on

empirical grounds, just as we have already done in the seventh chapter concerning objects or bodies; and we may conveniently begin with Locke's opinion. In his *Essay of H. U.* (Book II. chap. xxiii.), having shown that we have no distinct idea of the substance of bodies, but only a supposition of one knows not what support of such qualities as are capable of producing simple ideas in us—an obscure and relative idea,—he goes on to maintain (§ 15) with much humour that, "by putting together the ideas of thinking, perceiving, liberty and power of moving themselves and other things, we have as clear a perception and notion of immaterial substances, as we have of material. For our idea of substance is equally obscure, or none at all, in both." The primary ideas of body, he says, are the cohesion of solid, and consequently separable, parts, and a power of communicating motion by impulse; figure is only a consequence of finite extension: the ideas peculiar to spirit are thinking and will, or a power of putting body into motion by thought; existence, duration, mobility are common to both (§§ 17-18). "We have by daily experience clear evidence of motion produced both by impulse and by thought. . . . Pure spirit, God, is only active; pure matter is only passive; those beings (such as men) that are both active and passive, we may judge to partake of both" (§ 28).

Here then we may seem to be taking our stand upon experience; though in fact the ground is mined by scholastic prejudices. Substances are known by their attributes; that could be assumed: matter especially might be taken for granted. As to spirit, Locke knows there will be greater difficulty in bringing home its substantiality to the ordinary reader; but, he urges, the argument is as good for this as for that. Here too there are certain attributes or "peculiar ideas," namely, thought and will, or the power of moving bodies by thought: these attributes are distinct from those of matter, and imply a distinct substance—so far as we can form any idea of substance; why is not the argument convincing? Partly, no doubt, because most men are so continuously engrossed in manipulating material bodies and think so seldom of their own minds, that they are not accustomed to apply to the latter any

category: partly, by mere force of association between the word substance and bodies. But even to the psychologist or metaphysician reflection discovers many difficulties in maintaining the substantiality of the Self. Subjective consciousness is so different from the objective qualities of bodies, solidity, movement, etc., that it does not directly suggest a substance in the same sense as they do: it wants vividness, steadiness, independence, permanence, continuity and measure in its changes. Its most constant character, the nisus or kinæsthesis, had until recently gone unnoticed or unnamed. Few philosophers have adopted such a doctrine as Hamilton's of "unconscious mental modifications," according to which all past thoughts still exist in the substance of the soul, as bodies are supposed to when out of sight; and no one, I believe, except Leibniz (of whom in Chap. XI.), has suggested that future thoughts already exist like undiscovered bodies. But all this seems necessary in order to put the substance of mind on the same footing as the substance of matter. It is very natural to regard consciousness as an activity of the organic body; and in fact that is what happens when consciousness is attributed to the soul or ghost; for this is a shadow, double, or imitation of the body and is intensely imagined as an objective thing. Being less palpable and visible than the body, it is now conceived by metaphysicians as of a wholly different nature. But, surely, consciousness would never have been supposed to imply a distinct substance from the body, had not the belief in ghosts arisen from other causes, and been universally popular before the beginning of philosophical reflection. Besides, if substance is an obscure relative idea of I know not what even when referred to bodies; how much more obscure it becomes if we attempt to refer it to bodies and also to such a different thing as consciousness.

§ 5. Whether Subject is Substance, then, must depend upon that other attribute which Locke ascribes to it, the power of moving bodies. But this attribute is common to bodies and created spirits; and if Locke regarded bodies as having received their original impulse from God, he certainly regarded all the powers of created spirits as derived from the

same source; and there is no difference between a body's moving another by impulse, and a spirit doing the same by thought, except that the latter process is more obscure because we can trace no equivalence. If, then, the attribute of motivity be the same in bodies and spirits, it points to the same substance as common to both. However, in Locke's view, God has endowed spirits with self-activity and has denied this to matter; he held that spirits and bodies are entirely different; so, as it is of little use to argue with him now, I will turn to more recent ways of thinking.

If thought itself moves bodies, it must be either as a mode of energy correlated with others, or not. In the former case it belongs to the system of material things, just as they do. But as this may seem to imply a charge of "materialism" against such a way of thinking, I beg leave to say that the term "materialism" is here used descriptively, not contumeliously. A system of Materialism is, in my esteem, as respectable as a system of Spiritualism, if it is as well reasoned; and if better reasoned, it is more respectable. Why not, seeing that our knowledge of bodies shows them to be far more wonderful than anything we have been told of spirits?

But now in the alternative case, that thought moves bodies, not as a mode of energy, but in some way peculiar to itself; what shall we say of it? I say that whatever is peculiar can neither explain anything nor be explained, and has no place in philosophy.

If indeed consciousness could be separated from organised bodies and experimented with in isolation, empirical laws might conceivably be discovered concerning its relation to moving bodies; but such laws would merely make a list by themselves, not only irrelevant to, but in conflict with, the laws of energy.

Let us then inquire what evidence there is that thought moves bodies. It is now generally held that our consciousness of activity, or sense of effort, is excited by muscular, tendinous, articular stimuli in moving, straining, etc., just as colour or sound is due to the stimulus of the optic or aural nerve; that is to say, it points to the influence of body on mind rather

than of mind on body. Thus what was formerly the most popular argument in favour of the moving power of thought, or will-force, has quite lost its significance.

Spencer, however, thinks that states of consciousness are "factors" in our nervous and physical activities, and for this opinion he gives three reasons: (1) the facts of habit "prove that states of consciousness which were at first accompaniments of sensory impressions and resulting motions, gradually cease to be concomitants"; they suggest that consciousness "exists in any line of communication in course of establishment and disappears when the communication becomes perfect." But I do not see that this proves anything more than that distinct consciousness accompanies the activities of the more plastic and less organised matter of the cortex, and sinks to some lower degree of consciousness or subconsciousness when organisation has so far advanced that the current passes more rapidly or by a shorter circuit. We must not exaggerate the unconsciousness of habit: true habit, formed within the individual's experience with little or no inherited predisposition, is not only a conscious process, but is always liable to disturbances and interruptions in which the fuller original consciousness revives. Spencer's examples of reading and knitting fully illustrate this. (2) "Sundry facts appear to imply that consciousness is needful as an initiative in cases where there are no external stimuli to set up the co-ordinated nervous changes: the nervous structures, though capable of doing everything required if set going, are not set going unless there arises an idea. Now this implies that an idea, or co-ordinated set of feelings, has the power of working changes in the nervous centres and setting up motions: the state of consciousness is a *factor*." But whilst it is true that in many cases the nervous structures are not set going unless there arises an idea; can we suppose that the idea arises without any corresponding nervous change? There may be no external stimuli, or none traceable; but this does not exclude central excitation. And although the antecedents, whether physical or mental, are by no means always known, and accordingly psychologists discuss "free" or "spontaneous" ideas; yet

they do not suppose such ideas to be absolutely free or spontaneous; but regard them as having, of course, some physiological concomitant, and therefore propose hypotheses, such as local congestion, or omitted links. (3) There are "passive emotions," such as grief, which, though directly dependent on nervous changes, do not initiate actions; so that the feeling seems to be produced by the molecular activity and to absorb it, since otherwise it must have further effects (*First Princ.* 71 B). But surely there are other ways, besides external actions, by which the molecular activity accompanying grief may be relieved. The vaso-motor discharge gives a sufficient account of it, and, by affecting the blood-supply to the voluntary tracts, partly (at least) explains the passivity which characterises this emotion.

In § 71 C, Spencer declares the relation of consciousness to nervous action to be on any hypothesis inconceivable; he mentions particularly the supposition that "consciousness inheres in the all-pervading ether," which may be capable under special conditions in certain parts of the nervous system, of being affected by nervous changes so as to result in feeling, and reciprocally of affecting the nervous changes. But then, he says, "we must assume that the potentiality of feeling is universal," though realised only in special conditions; and such an explanation is merely verbal, since we know not what the ether is. How mind and matter affect one another is a mystery, but not a profounder one "than the transformation of the physical forces into one another. All ultimate problems are insoluble." To these positions, however, it is again impossible to assent. The transformation of physical forces is not a mystery in the same sense as the relation of mind and body is: for it has been experimentally ascertained in detail, and generalised in such a way as to satisfy the requirements of explanation. But consciousness, besides the not being definitely measurable, and therefore not equatable with physical forces, is further of such a different character from them that an equation is inconceivable: and where the conditions of scientific explanation are wanting there is some sense in proclaiming a mystery. That any physical force and consciousness

are so different that an equation, or any exchange between them, is inconceivable, is in my judgment intuitively plain or self-evident; but this argument can have no weight with those who see otherwise.

§ 6. The very suggestion that possibly the ether may be that in which "consciousness inheres," shows that consciousness cannot be put upon the same footing with physical forces; for no one, I presume, would speak of light as "inhering" in the ether. Physical light is the ether itself in a certain state of vibration, but consciousness is nothing like vibration. The truth is that neither the ether, nor the cerebral cortex, nor any other phenomenon, can be the seat, or basis, or vehicle of consciousness, even because all phenomena exist in consciousness and cannot be related to it as they are to one another. For exactly the same reason consciousness is not a substance or a force; all empirical substances and forces are phenomena. To a free consideration consciousness does not even suggest any substance: the dogma of its substantiality is a mixture of savage superstition and scholastic gibberish. As for its alleged simplicity, nothing is more contrary to every man's experience. Its boasted unity is a mystical derivative from the Greek's amazement at Arithmetic: organic totality is the character of an individual Subject.

It ought not to be surprising that consciousness, or any Subject, should not need to be a substance, seeing that itself is Reality: with phenomena it is otherwise, and therefore they need to be referred to a substance. But how is this: was it not agreed that the world of sense-perception, *i.e.* phenomena, constituted Empirical Reality, the ground and beginning of all inquiry and of all confidence? That is a very natural question; and I reply, first, that Empirical Reality is a mode of consciousness, and in that sense has the reality of consciousness; secondly, that Empirical Reality is, as to confidence, more real than the Transcendent Being, which (in Chap. VIII.) seemed to be required by reflection upon experience; and thirdly, that it is only with reference to Transcendent Being that Empirical Reality has the character of a phenomenon. The phenomenon is constructed by the Subject, but is not subjective: reflection

finds a difficulty in this, and tries to overcome it by considering the phenomenon as representing something not subjective, from which relation it has its objective character. It is another way of expressing this relation to speak of the phenomenon as consisting of the attributes of a substance.

There is no contradiction between simple experience and reflection. Happily, this is impossible; because the unsophisticated man has not our concepts, and we have not his simplicity. If we try to put ourselves in his place, and say —Now that tree is indisputably real; yet, on reflection, it is a phenomenon—this can only seem a contradiction from not reflecting enough. To suppose that to be "representative" is to want reality, confuses the philosophic with the popular or political uses of this word. More reasonably it might be contended that since the phenomenon has the reality of consciousness and is also representative of the Ding an sich, it has the power of both, and hence is more real than either of them; as, in fact, to simple experience it is. Representativeness is merely a way of considering phenomena in relation to a Being which is half thought by an indicative or orectic category for the sake of filling up a sort of blind-spot in experience.

But if the Subject is not substance how is it related to Transcendent Being? Is it a phenomenon or an attribute of that mysterious thing? It is not a phenomenon, because it is a condition of all phenomena; and it is quite useless to call it an attribute. We have seen (Chap. VII.) that even in experience the category of Substance and Attribute can have significance given to it only if we treat a part of any group of attributes as substance in relation to some other of the group: we cannot, therefore, by this analogy, transfer it beyond experience. Further, Substance and Attribute inevitably suggest "prior and posterior in Nature," "higher and lower," degrees of dignity in the list of the ten Categories, the metaphysician's table of precedence; and it is intolerable that Self-consciousness should be logically inferior to an hypothesis. Besides, to quote again Spinoza's definition, an attribute is that which the intellect regards as of the essence of substance;

and this is the necessary and final definition: for what else can an attribute be? But, then, strictly speaking, intellect knows only its own contents, and therefore the essence of substance is exhausted by modes of consciousness. To call consciousness the attribute of Being, then, would lead to a contradiction with the conclusion already drawn that consciousness is not the whole of Being. Of course, no words can meet this difficulty; but, perhaps, to think of consciousness as an activity of Transcendent Being may be least misleading; and for the particular Subject, if any one must have a 'Thing' that thinks, he may take that Being of which the body is phenomenon, and may (if he likes) call it the Soul. It would be convenient, and I might do so myself, but for the latent rhetoric of technical terms, that often gains adhesion without unanimity and assent without understanding.

§ 7. I have been drawn by the trend of ideas into that region beyond experience which belongs to our next chapter; but before closing this one there remains for discussion the "relation of body and mind" as conceived by empirical Physiology and Psychology. A belief in some connection of body and mind is instinctive: Greek psychological speculation is full of it; and with the development of modern Physiology it has become increasingly definite. It is now almost impossible to try to theorise about the mind without appealing to what is supposed to be the bodily correspondence. It is true that no physical theory can ever be an explanation of mental activity; for the category of Causation fails us, and even Resemblance cannot be traced between mental and physical processes but only between the relations of such processes: I mean, there is no resemblance between the excitement of the retina and a colour, nor yet between the activity of the eye muscles and the kinæsthesis, but the retina and the muscles co-operate, and so do colour and the kinæsthesis, in the act of perception. Yet a physiological theory of the processes corresponding with the mental life, though so remotely explanatory, is strongly desired.

The reasons for desiring it, I take to be these:—

(1) Mental states cannot be developed by introspection,

and traced in their connections and retraced, with enough fulness, certainty and constancy to produce the conviction that we are observing a thorough continuity of events according to laws. I shall not sneer at the laws of association, which in their day constituted the best Psychology extant; but is it not a great relief to have discovered "association-fibres"? Moreover, one's own consciousness is full of fag-ends. As James Ward says, sensation cannot be explained by antecedent psychoses: it is always beginning. It seems to me, further, that most trains of thought never definitely end; but presently we find ourselves thinking of something else. The fluctuation of attention is notorious: the occasion of it may be external distraction as often as internal, or mere fatigue: but what is the meaning of consciousness being fatigued?

(2) Mental states give little opportunity for measurement: except as to their time-relations, duration and interval, they have no definite quantity. And in mental processes of any complexity so much is subconscious that measurement is out of the question. If, for example, we could measure the more intense or conspicuous of our motives to any action, the indefinite remainder would far outweigh them. This vagueness and uncertainty of our subjectivity may be ascribed, partly, to the withdrawal of attention from it by the predominant interest of action in the external world: hitherto few people have seen much use in introspection. Partly, it is due to the symbolic character of apperception: this is necessary to the co-ordination of consciousness, but it submerges all that which G. F. Stout calls the "meaning" of images and signs—incomparably the greater portion of the consciousness involved; so that more and more of it lapses into subconsciousness.

(3) The first object of Psychology is to explain the nature of the mind so far as it is common to us all: we therefore turn to that upon which we can agree, physical fact. Each man is a physical fact to all others: for you, your volition precedes your action; but for me, your action is a conversion of potential. Introspective Psychology can never explain a completed volition. In the region of physical fact we find measurement, continuity, law: we find it as instructive con-

cerning idiosyncrasies as concerning our common nature: we learn from it facts most important to the mental life which introspection could never have discovered; for example, the function of the semi-circular canals.

(4) Through Physiology, Psychology is connected with Biology, obtains the aid of biological retrospect, biological laws and the comparative method. This alliance has been the re-birth of the science.

(5) It is through our physical nature that society exists, since our bodies are the sole means of communication; and consequently on our despised bodies depend religion, art, polity and morals: upon all which subjects Physiology and Biology are very instructive.

In short, self-observation or introspection does not afford sufficient grounds for the construction of mental science; and it seems to me that this belongs to the nature of the mind as immediate Reality; that which admits of prolonged and exact study by experiment and demonstration is the phenomenon. Hence the attraction of physiological method. Psychologists who, being also physiologists, attempt to construct mental science by introspection alone, cannot eliminate the influence of their physiological knowledge. An investigation the most comprehensive possible into the physiological phenomena is necessary; and along with it a generalisation of the conditions, so far as ascertainable, of the rise, activity and lapse of the correlative consciousness. In pursuing these inquiries it is now usual to assume a "parallelism" between physical and mental processes; for criticisms of that doctrine James Ward's *Naturalism and Agnosticism* (Part III.) may be consulted. In my judgment, if the doctrine of parallelism is understood metaphysically, it makes the mistake of treating consciousness as a phenomenon on the same footing as nervous changes. For scientific purposes, indeed, any hypothesis that is helpful is justifiable; and in psychological discussions, it would be pedantic to object to the practice of describing processes of consciousness as phenomena of mind. But the border between Psychology and Metaphysics is not always easy to determine. Of course, it is not expected that an exact

parallel should be discoverable between nervous or cerebral changes on the one hand, and on the other those degrees of consciousness that are open to introspection: the sinking into subconsciousness of innumerable processes is a condition of the unembarrassed supremacy of apperception, whether in controlling conduct or enlarging knowledge.

We have inferred the universality of consciousness, and free-living cells are generally held to be conscious; so that as the human body is an organisation of cells and atoms, it is natural to regard the human mind as an organisation of consciousness. This consideration may remind the reader of certain doctrines of "mind-stuff"; but those doctrines, though well meant, have (such of them as I have seen) the same fault as the popular doctrine of parallelism; namely, that they put phenomena and Reality upon the same footing. Still, if I am asked how my hypothesis is to be defended against the assaults of William James in chap. vi. of his *Principles of Psychology*, I reply (1) that he takes for granted that a combination of mental processes must be causative and mechanical, and that I have shown these Categories to be inapplicable; and (2) that his assertion that an unity cannot be formed of atoms except as it affects something else, is merely a denial in the case at issue that this unity is a consciousness. It is true he hints here that there is much to be said for regarding the soul as that which is conscious; but as, in chap. x., he very candidly explains that the conception of the soul is in his opinion quite useless, and that the present section of the stream of consciousness may be regarded as carrying the whole of it—and that for itself, not for some one else—I do not see how he differs from his opponents; especially the Associationists: whom he misunderstands.

But, again, if there is an organisation of consciousness into a more comprehensive unity, it does not follow that the elements were originally discrete. No cells, since the origin of life, are discrete (at least in the same line of descent); they are discrete in space, but continuous in time, which we have shown to have the greater reality. As to the molecules of which cells are composed, whether they are really discrete

or in some way continuous through the ether, we do not know. So far, then, as we may infer from these phenomena to the conscious Reality, we have no ground for denying that all Consciousness may be one continuum, though under special conditions it rises at many points into special fulness.

If the question be put—How the rise of special minds is possible? the reply must serve, that the corresponding growth of the body offers the best analogy for interpreting the growth of the mind. What is ultimate is unique: there can be no true analogue to the development of mind; but organisation is the nearest we have. Because organisms alone of things have their single interests in the series of birth, youth, maturity, decay and death, they alone have a continuous, unified teleological consciousness, and probably they alone know pleasure and pain. Organic life is a constant struggle, or co-operation, of the organism with other things that are contrasted with itself; and the increasing consciousness of this is self-consciousness. To make an extraordinary wonder of self-consciousness has no ground but the love of wonder. Self is the continuity of the consciousness and interest of that of which the body is the phenomenon. The more widely the interests of the organism extend to events in space and time, the more comprehensive consciousness becomes, and the higher self-consciousness rises: yet Schopenhauer rightly held that this progress tends to the obliteration of individuality, through recognition of the unity of the World whose self-consciousness the individual is: for as a whole it cannot be self-conscious for want of contrast.

If it be urged that, nevertheless, consciousness seems to be of no more use to the world than to a single animal, since all physical changes might go on just as well without it, such a speculation ranges beyond my power of flight. A world without consciousness would be a very different world from the present one; and what might be possible in it, is not for me to say. That an animal, considered from the outside, may be construed to lead its life independently of consciousness, and, therefore, seems to have no need of it; whilst we, being animals ourselves, have no doubt that, inside, it is somehow

conscious according to its organisation: this is good ground for inferring that consciousness is the inside of all Nature, from which plants and animals and men arise. But when we turn to Nature herself, to speculate as to what may be useful to her is grotesque. Shall we hear it suggested that the present world is conscious in virtue of Natural Selection, all other unconscious worlds having been annihilated in an antecosmic struggle for existence, and that thereby the utility of consciousness is proved? Use is for them that lack; for you and me because we are limited and poor: for us, who want and desire, utility seems a great matter. But these things have no place in the world of Nature, serene above hope or fear, and tranquil in inexhaustible sufficiency.

CHAPTER XI

THE ONTOLOGY OF THE SUBJECT

§ 1. According to the earliest beliefs concerning ghosts, they were a kind of bodies, though of a more subtle material than ordinary bodies. This was also the view of the early Greek philosophers, even of Anaxagoras, and of the Stoics and Epicureans for centuries later. Nay, though such a notion would now by most people be verbally disavowed, all popular stories and all the practices of Sludge imply that it still prevails. It is generally held by scholars that the clear conception of immaterialism was first reached by Plato. In various Dialogues he describes the soul as most real, living, self-active, unitary, by nature divine, without beginning or end. On the other hand, his separation of the soul's faculties is not easily reconcilable with its alleged unity, and the doctrines of metempsychosis, degradation and purification, of animal souls and plant souls and specific souls (that is the Ideas) are all derived from traditionary mythology; and the parables by which he tries to explain himself are so thick with suggestions of material things, that if we discard the imagery it is impossible to say what remains. Still it is undoubtedly from Plato chiefly that all these predicates concerning the Soul—unity, simplicity, substantiality, immortality—descended to the Rational Psychology of the seventeenth and eighteenth centuries that suffered so severely under the criticism of Kant.

According to Aristotle, soul is the form or entelechy of an organic body: the nutritive soul of plants exists in subordination to the sensitive soul in animals, and both to the rational soul in man. Memory and imagination belong to the sensitive

soul and are shared with man by the higher animals; and even in man reason itself has two functions, a passive and an active, and its passive function is dependent on the *φαντάσματα* of memory and imagination, consisting in what may be called picture-thinking, whilst the higher processes of abstraction and unification belong to active reason. The sensitive soul is transmitted by generation, grows with the individual and dies; but active reason, though born with a man, is not generated but comes from without, and at death remains akin, and returns, to the Reason of all things, thought of thought—equivalent to form of form,—or absolute abstraction of actual Being. Hence in Aristotle's view the soul is immaterial in the sense that form is distinguished from matter in his system. The individual soul is neither simple nor immortal, and is self-active only in the sense that every living thing is self-moving: it implies the existence of a body (its matter) and each soul implies a particular body whose form it is; so that metempsychosis is impossible. On the whole, Aristotle's doctrine is much further removed than Plato's from the ghost-theory and all popular notions ancient or modern. It is the most attenuated version of Animism: Spinoza's stands nearest to it, amongst philosophic doctrines.

Immaterialism in the modern sense is much more explicitly stated by Plotinus, developing the teaching of Plato; but for details I shall be content to refer to T. Whittaker's *Neo-Platonists* (chap. v. § 1, on the Psychology of Plotinus). It is, of course, Christian Theology that has moulded the great body of existing belief about the soul: at least verbally, and subject to the influence of local traditions and to the limitations of the popular mind when trying to apprehend metaphysical concepts. Its doctrine of the immateriality of the soul is explicit, in spite of the theory of a celestial body and many imaginative forms employed in exposition; the effect of which upon the unmetaphysical disciple is to beget in most cases a very materialistic way of thinking.

§ 2. In the modern schools of philosophy discussions of the soul or ego date from the definitions of Descartes. Matter he defined by the single attribute of Extension, and Mind by

the single attribute of Thought. Since thinking was the only ground for believing in his own existence, it followed that he was "a certain thing or substance whose whole nature consists in thinking, and needs for its existence neither any place nor any material thing or body" (*De Methodo*, iv.). From this passage subsequent speculations concerning the Subject set out in three directions.

First, a strong current has followed the course ostensively taken by Descartes himself: the Ego is a thinking Substance. Little, indeed, can be said for his own argument: however we may justify the inference from thought to existence, the further transition to Substance is not formally legitimate. It is so bad that, considering it in connection with other remarkable paralogisms in this part of his philosophy, as well as other data, some critics have suspected his sincerity; but this has no bearing upon the issue. A bad argument is bad even in the mouth of a martyr; yet there may be a legitimate way of reaching the same conclusion. So strong is the sense of the reality of consciousness, and so persistent the influence of the ghost-theory in determining the way in which its reality shall be conceived, that in every age some of the greatest philosophers have striven to establish, or re-establish, the position that consciousness, thought, or the ego is a Substance or (by a vain refinement) an Agent. If the position ever seems to be captured, it soon seems to be retaken: as we may see in the Continental series, Leibniz, Kant, Lotze; or in the English series, Berkeley, Hume, J. S. Mill.

Secondly, reconsidering Descartes' data, instead of defending his conclusion, the more scientific inquirer recognises the Empirical Reality of consciousness, but sees that, whilst the mind or Self is an immediate fact, yet it is not immediately given as Substance but only as Subject. As to this Subject problems arise similar to those that concern the Object: only fragmentary experience being directly attainable, to find the conceptual system that completes it; its reality being granted, to determine its relation to other real things, and this both as to existence and as to knowledge. According to the temperament of the men who undertake such inquiries, they

may lead to the Scepticism of Hume or the Criticism of Kant.

Or thirdly, considering the ostentatious feebleness of Descartes' argument for the substantiality of the Soul, and finding his mechanical Natural Philosophy of the world and of the animal body far more interesting and fruitful, other thinkers have been content to regard consciousness as a function of the body: I mean the Materialists. Rare in philosophical schools, common in laboratories, they are oftener feared than understood, and are liable to be condemned for their doctrine's inferential consequences rather than for its inconsequential inferences.

The error of Materialism concerning the Subject, lies in regarding it as dependent on a thing given in experience or in the conceptual extension of experience. It hypostatises the phenomenon, assumes that Substance is presented by Empirical Reality; where, in fact, only the Object is presented, whilst the notion of Substance is immanent there and must be elicited by reflection and criticism. Materialism, then, treats the Subject as dependent on the Object and inferior to it in persistence and reality: dependent, however, on the organic form of the body, not on the particular molecules organised, since their presence is long outlived by memory and purpose; so that the particular molecules that come and go must be considered substitutable for one another as to their psychic activities. The special seat of the Ego or centre of psychic life, which Descartes placed in the pineal gland, may now be sought by some speculative physiologists in the frontal lobes, as the chief organ of attention, because there the movements of the head and eyes are controlled; by some, again, more especially in the third left frontal convolution (in right-handed people—precision being desirable in such a matter), because that is the organ of speech, essential to the using of the pronouns of the first person; by others in the brain as a whole, because it acts as a whole, and nothing less can explain those alterations of personality by which the same body exhibits at different times distinct egos, each complete in all its psychic functions. But,

interesting as such speculations are (and to me they are deeply interesting), I am obliged to say as before, that the body is a phenomenon to the Subject, and cannot be the ground of its existence or activities.

§ 3. It will be convenient to take the other hypotheses concerning the Subject nearly in historical order, and to begin with Leibniz's Monadology as, after Descartes, the most original account of the Soul's substantiality. The Monad is a simple substance having no extension, figure or divisibility. Monads are the true atoms of Nature and, in a word, the elements of things. They are regarded as created by God and dependent solely on His will; but otherwise, in the course of Nature, they are without beginning or end. Having no internal structure of parts, no internal movement is possible, nor any change due to external causes: they have no windows. According to their internal qualities, which consist in perceptions, each is different from every other; for these perceptions represent to each the relations of all other Monads, and therefore must in each be different. Being created, they are subject to change; but since external influence is impossible, there can only be a change of perceptions caused by an internal principle of appetition. Monads further differ in the distinctness of their perceptions; which in some are only *petites* or faint, as in ourselves whilst asleep: but in others they rise to full consciousness or apperception, as when we are awake; and similarly with desires.

All changes of perception in a Monad follow upon appetition or final causes; but they also represent the changes taking place in the relations of other Monads, as if these were movements only to be explained by efficient causes; and the correspondence between a Monad's internal changes and the changes in the relations of other Monads, is maintained by the pre-established Harmony.

A body is an aggregate of Monads, but as an aggregate of points cannot make a real body, its unity comes from our perception; it is *un être de raison, ou plutôt d'imagination, un Phénomène* (*Examen des Principes du R. P. Malebranche*). And so is its movement; for space and time are not real

things, but ideal. Space is the order of possible co-existences, time of *possibilités inconstantes, mais qui ont pourtant de la connexion* (*Réplique aux Réflexions de Bayle*). They are eternal truths holding alike of the possible and the existent (that is, of positions whether occupied or not) (*Nouveaux Essais*, ii. 14, § 26).

Such is the artificial Idealism of Leibniz, ingenious and circumspect, adroitly adapted to contemporary prejudices, yet suggesting important truths; *bizarre* and in a manner revolting, yet easier to ridicule than refute. We may first observe that a nominal Idealism was easy in that age when the word 'idea' was commonly used for every object of the mind: danger lay in the temptation to transliterate material into mental terminology, and so produce an Idealism nominal and nothing more. Has not Leibniz fallen into this snare? Certainly, time, space and body are all ideal in the sense that the given Real is an Object or Phenomenon; but in this sense 'ideal' and 'real' are not contrasted.

It is disappointing to find that the faint 'perceptions' which in each Monad, however fast asleep, represent the relations of all others, or mirror the world as if it were a scene of moving bodies, are merely substituted verbally for mechanical forces, through which the rest of the world is conceived to influence (or be mirrored in) each atom. There is no design to alter the interpretation of Nature, but only to provide an excuse for regarding it as an hallucination. The plan is harmless, useless and negligible. The appetitions that are the only means of changing a Monad's perceptions, and are identified by Leibniz with Final Causes, become if possible still more disappointing, when we consider that an appetition cannot be a Final Cause unless it represents the change about to happen; that is, unless it is a perception (P) anticipating a perception (Q); and, again, that P can only have arisen from an earlier anticipation (O) *ad infinitum*. By this device Final Causes depend on antecedents, and do not differ from purely natural determination. In fact, of course, this is always true: those who take the notion of Final Causes from human action must suppose that it

is possible to lay a plan without character and without experience.

As in this system forces are called perceptions without prejudice to their objectivity; and appetitions are called Final Causes without ceasing to be Effects; so time and space are called ideal without any loss of reality. They are said to be only the orders of things that do or may exist. But time at any rate is an order of changes of perception in the Monad; and it is a real order, unless experience goes for nothing. It would be vain to say that time is ideal because it is an order of ideas; for (1) an order of ideas is itself real; and (2) if ideas are not real, Idealism is another name for Nihilism; or, contrast having been abolished, why not call it Materialism? Let us see. Space, being ideal in the same sense as time, is in fact real. Therefore movements represented in space are real; and so are moving bodies. But real bodies cannot consist of unextended parts: therefore the Monads are physical Atoms. Observe, moreover, that time and space are "eternal truths," whose seat is the Divine Mind and whose apprehension is the highest reach of human reason; yet they are not anything real or absolute. This is flat contradiction and the negation of Idealism. It sets God thinking to no purpose.

Leibniz offers no proof of the substantiality of the Monad: it is an hypothesis depending upon the adequacy of the speculative superstructure as a working model of the World; and the superstructure turns out to be verbal and nugatory. We may be sure that in Philosophy ingenuity will never long avail. The taint of it always warns us that the author is inventing a scheme for himself, not discovering the plan of Nature. And how shall he escape detection? Even if a pliant adaptation to prevailing prejudices should conciliate contemporary criticism, it is impossible to square posterity. Leibniz is a salient example of the men who are too clever by half.

§ 4. Berkeley's Idealism on its subjective side is less of a departure from the natural way of thinking than the Monadology. His discussion of the Self or Subject is brief and

confident. It first occurs in the *Princ. of H. K.* (§§ 2 and 27). The spirit, he argues, is not anything of which we have an idea, since ideas are inert, whilst spirit is perceiving, active substance. It is distinct from ideas, though, it must be owned, we have some notion of it.—But can anything that is not an idea be *distinct* from an idea?—Again, in a passage of the third *Dialogue between Hylas and Philonous*, inserted in the third edition, Philonous having granted that he has no idea like unto the nature of God, whilst yet he infers His being and power, is asked by Hylas why similarly one may not conceive the existence of Matter [*per se*] without having an idea of it; and he replies that "all the notion I have of God is obtained from reflecting on my own soul." For ideas are altogether passive and inert, and therefore can never represent active spirit. But I know that I am a spirit or thinking substance,—an indivisible, unextended thing which thinks, acts, and perceives—"immediately or intuitively, though I do not perceive it as I perceive a triangle, a colour or a sound." From this notion of self we may by reflection know God, and from our dependency infer His creative power. But the case is different with material things, the notion of which is (1) inconsistent, and (2) unsupported by any evidence. When Hylas suggests that Philonous seems after all to be "only a system of fleeting ideas," Philonous repeats that he is conscious of his own being, as a thinking active principle, one and the same self, perceiving colours and sounds, whereas they cannot perceive one another. Rational beings have in the production of motions only limited powers, though "sufficient to entitle them to all the guilt of their actions." As to the existence of extended things, houses and trees, in the unextended mind, most mental operations (he says) are signified by words borrowed from sensible things, and the meaning here really is that the mind comprehends or perceives such things, as it is affected by some active being distinct from itself.

But how vain was this attempt to evade the consequences of Empirical Idealism is shown by Hume; who accepts Berkeley's criticism of material substance and his denial of

the activity or power of sensible things, greatly strengthening his reasonings, especially about causation; but then goes on to direct a similar criticism against the notions of mental substance and mental activity.

Hume's polemic (*Treatise*, Part IV. § 5) is not in the first place directed against Berkeley, but against Materialists and Spiritualists alike; against all the curious reasoners about "material and immaterial substances, in which they suppose our perceptions to inhere." Observing that the notion of substance and inherence is unintelligible, he argues that in particular it is inconceivable that a thought or a passion can be conjoined to anything divisible and extended; it cannot be to the right or left, inside or outside, unless at one point which is indivisible; and if it were coextensive with an extended thing, we must suppose the possibility of a passion being a yard long, a foot broad and an inch thick: but, again, it is equally inconceivable that an extended perception, such as a table, can incorporate with a simple and indivisible Subject; for this cannot lie to the right or left of that, nor be entire in every part of it though itself unextended, without leading to absurdities and justifying the supposed union of our indivisible perceptions with an extended substance.

It is, I suppose, admitted that this argument of Hume's disposes of the vague notion of inherence as explaining perception: Berkeley had already repudiated it, and substituted a spiritual power or activity *sui generis*. But Hume next discusses the cause of our perceptions, and he argues that whether or not they are caused by the motions of matter is purely a question of experience and evidence; since (as he has shown) we are never sensible of any connection betwixt causes and effects, and *a priori* anything may produce anything. And it is in vain, he says, to appeal to the action or power of ourselves or of the Deity, since it has already been shown that "we have no idea of a being endowed with any power, much less with infinite power."

Hume then (§ 6) makes a more direct attack on Berkeley: he argues that we have no idea of Self in "its perfect identity and simplicity," for if we had there must be in self-conscious-

ness some impression "invariably the same through the whole course of our lives," whereas "there is no impression constant and invariable." We are always conscious in introspection of "some particular perception or other." Setting aside some metaphysicians, the rest of mankind are (each of them) nothing but a "bundle or collection of particular perceptions which succeed each other with an inconceivable rapidity, and are in a perpetual flux and movement." Whilst, then, the strict conception of identity or sameness is of an object that remains invariable and uninterrupted through a supposed variation of time, the identity of a self or person is analogous to that we attribute to a plant or an animal. In the successive existence of a mind or thinking person, the "fictitious" identity we ascribe to it is due, first, to the resemblances amongst successive states in which memory consists, and, secondly, to causation which links together its different perceptions in a system. The soul, therefore, may best be compared to a "commonwealth in which the several members are united by the reciprocal ties of government and subordination, and give rise to other persons, who propagate the same republic in the incessant changes of its parts." As to the soul's simplicity, "an object, whose different coexistent parts are bound together by a close relation, operates upon the imagination after much the same manner as one perfectly simple and indivisible." We therefore "feign a principle of union as the support of this simplicity and the centre of all the different parts and qualities of the object."

In spite of the instructiveness of this section, the use of such expressions as "fictitious" for what is entirely natural, "feign" for a process instinctive and undesigning, "bundle" for what he acknowledges to have organic unity, and the analogy of a commonwealth adopted in preference to the closer organic structure of an animal—all suggest an endeavour to minimise the integrity of personal life as against the overstrained statements of Berkeley and the dogmatic philosophers. Still, the essential conclusion, that the mind does not immediately know itself as a Substance, was supported by Kant, and has never since been shaken.

Spinoza's philosophy bears a greater resemblance to Hume's than has generally been recognised. The scepticism of the one and mysticism of the other are so opposed in tone as to disguise the fact that both issue in a strict phenomenalism according to laws of Nature. In their views of the Subject this is very plain: for according to Spinoza the mind is the idea of the body (Part II., 13); and as the body consists of innumerable small parts of extension, so does the mind of corresponding ideas (Part II., 15); and, finally, the union among ideas of the mind corresponds with the organisation of the body. For "in so far as a body is better fitted to do or suffer many things, in that degree is its mind more fit to perceive many things at the same time; and the more the actions of a body depend solely on itself, and the less other bodies concur with it in action, the more capable is its mind of distinct understanding" (Part II., 13, *Schol.*; cf. IV. 38), and therefore of blessedness and self-control (Part V., 39). At least, I do not see how we can translate a 'fitness to do or suffer many things' and 'depending in action upon itself,' except by the word 'organisation.'

§ 5. Mill, turning like Hume from the analysis of material to that of mental Substance, inquires in his *Examination of Hamilton* (chap. xii.) whether the conception of the mind as a permanent existence is an original datum of consciousness. He observes that "our notion of Mind, as well as of Matter, is the notion of a permanent something, contrasted with the perpetual flux of the sensations and other feelings or mental states which we refer to it"; and that this permanence, supposing that there were nothing else to be considered, might (like Matter) be explained as "a Permanent Possibility of states," sensations, etc.: in sleep, *e.g.*, my capability of feeling is not destroyed, but only conditionally suspended. But there is something else to be considered, namely, Memory: which has the peculiarity of involving "a belief in more than its own present existence. A sensation involves only this: but a remembrance of sensation involves the suggestion and belief that a sensation of which it is a copy or representation actually existed in the past"; and not only that it existed

but that I myself, and no other, formerly had the sensation remembered. Thus I am not only a series of feelings or possibility of them, but am aware of myself as such; and it is a paradox that a series of feelings should be "aware of itself as a series." In the Appendix, Mill adds a good deal to this. "The organic tie," he says, "which connects the present consciousness with the past one of which it reminds me, is as near as I think we can get to a positive conception of Self." He will not decide whether "we are distinctly conscious of it in the act of remembrance," or, "according to the opinion of Kant, are not conscious of a Self at all but are compelled to assume it as a necessary condition of memory." But further, whilst the Mind is only known to itself phenomenally, as a series, "we are forced to apprehend every part of the series as linked with the other parts by something in common which is not the feelings themselves, any more than the succession of the feelings is the feelings themselves; and as that which is the same in the first as in the second, in the second as in the third, * * * must be the same in the first as in the fiftieth, this common element is a permanent element."

We have here a significant transition of expression from "the notion of a permanent something," which "we figure as remaining the same while the particular feelings, through which it reveals its existence, change" (p. 235, 3rd ed.)— to a common and permanent element in the feelings, which is not the feelings themselves (p. 257), nor any definite mode of consciousness, but which belongs to experience and is not merely the 'notion' of something. Now there is a relatively stable element in the flux of consciousness, namely, the cœnæsthesis or somatic feeling; it is not indeed permanent, but may remain much the same for hours in the background of consciousness whilst the distinct foreground rapidly changes; and this, as Ribot says, is a decisive factor of the empirical personality; but Mill does not seem to have meant the cœnæsthesis. And he can hardly have meant that every mental state has the character of memory; for though the fact of memory (or "retentiveness") is involved in every state, that is a very different thing from its having consciously the specific quality

of being remembered. Nor does he seem to have meant that the judgment "I think" accompanies every act of consciousness.

Mill's notion of a permanent self in introspection, though approaching Berkeley's belief, falls far short of it in confidence and definiteness. As to the Permanent Possibility of feeling that is figured to remain during the lapse of consciousness in sleep, since (in chap. xv.) he is inclined to admit Hamilton's "unconscious modifications in the only sense in which I can attach any very distinct meaning to them, namely, unconscious modifications of the nerves"—why should not the nervous system have served him equally well as the Permanent Possibility of feeling, or indeed, of memory?

Finally, as to the paradox of Memory, the difficulty of conceiving a series of conscious states conscious of itself as a series: if we really mean a series of "feelings," it is not only paradoxical but impossible: for 'feeling' is the lowest term of consciousness and can never amount to memory. But memory is not "peculiar in involving a belief in more than its own present existence." Mill knew, and has explained, that every cognition has this character, being significative or representative—reason of the universal, even sense-perception of some object; and a series, or stream, or organic activity of consciousness, conscious of its own former existence, is one in which occur ideas having the significative character which we call memory and believe to represent past reality. In this there is no peculiar paradox.

It is impossible to appreciate the reality of consciousness whilst treating its processes as phenomena. In Mill's *Essay on Theism* (Part III.) he goes somewhat further: "Feeling and thought are much more real than anything else, they are the only things which we directly know to be real." And as to the mind's substantiality, he says: "Substance is but a general name for the perdurability of attributes: wherever there is a series of thoughts connected together by memories, that constitutes a thinking substance." But, surely, such a series constitutes not a substance but a continuous activity. In his work on Hamilton, he says that our notion of Mind is "a permanent something, *contrasted* with the perpetual flux

of mental states"; which is not really perpetual because of sleep. No one would call that a substance which, as Mill supposed, might be suspended for several hours every day. What has become of the "permanent possibility"? In his *Theism*, then, Mill has emphasised the reality of the Subject, but he has committed an impropriety and a contradiction in calling it a thinking substance.

§ 6. Had Mill appreciated Kant's philosophy he could hardly have written his chapters on the Self without some discussion of the famous doctrines of the Unity of Apperception and the Paralogisms of pure Reason. Without taking up disproportionate space it is impossible here to examine all the passages in which Kant labours to explain these matters; but I must attempt a summary of his teaching.

The unity of Apperception, that is, of explicit consciousness, first becomes prominent in the Deduction of the Categories (§ 16). "The *I think*," he says, "must be able to accompany all my representations; for else something would be represented in me that could not at all be thought, which is as much as to say the representation would either be impossible or for me at least nothing at all." All the manifold of intuition, therefore, is necessarily related to the *I think* in any Subject; and this is an act of spontaneity not of sense (which is only receptive). It is called *pure* consciousness to distinguish it from the empirical; and *original* consciousness because it is that self-consciousness which, inasmuch as it gives rise to the representation *I think* accompanying all representations and in all consciousness one and the same, cannot be derived from anything further. It is also called the transcendental unity of self-consciousness to indicate the possibility of cognition *a priori*. It is the highest principle of all synthesis in both intuition and understanding; the ground of the categories, of the unity of objects, of the necessity and universality of experience or Nature: at least it is so for the human mind, though perhaps not for a mind whose representations should merely as such be actual—an intuitive Understanding (§ 17). Therefore, this objective unity of consciousness must be distinguished from the subjective unity of the internal sense,

which is empirical and contingent and varies in different men (§ 18), and consists of phenomena in time, which are thought under the categories (§ 24); that is, the unity of the empirical Subject is that of a something thought as one; but the pure unity of consciousness is the condition of all thinking, by the category of unity or any other. Herein I am conscious of myself, not as I appear to myself, noch wie ich an mir selbst bin, but only that I am: it is a thought not an intuition; so that the consciousness of self is far from being a knowledge of self (§ 25).

Now, to overlook this fact was the error of Rational Psychology (as in Descartes and Leibniz), which took the pure consciousness *I think* for an object, and proceeded to prove that it is (1) a Substance; (2) simple; (3) identical at all times; (4) in relation to possible objects in space, a soul. The proofs err, first, by assuming that the Self which is always a subject, never a predicate to thought, is therefore a Substance! Secondly, by inferring that the Ego, which is of course a *single* subject, is therefore a simple Substance. Similarly with the third case, identity. Fourthly, I distinguish Self as a thinking being from things in space; but it does not follow that the consciousness of myself is possible without things outside of me through which representations are given to me, or that I can exist merely as a thinking being, not as man. Such are the Paralogisms.

Although I cannot regard as historically true Kant's derivation of Rational Psychology from the mistake of treating the *I think* as a given object, since Rational Psychology is manifestly a scholastic recension of the ghost-theory; still, seeing the general truth of Kant's position that only the phenomenon (in his sense) is given, and that Self at any rate is posited as subject only, one cannot help wondering at Lotze's attempt to establish the independence of the soul as a simple substance merely on the evidence of the unity of Apperception. He explains indeed (*Metaphysics*, § 243) that this is in accordance with his own definition of a substance as "everything which possesses the power of producing and experiencing effects, in so far as it possesses the power"; and presently he

adds: "The fact of the unity of consciousness is *eo ipso* at once the fact of the existence of a substance: we do not need by a process of reasoning to conclude from the former to the latter as the condition of its existence" (I quote the translation). But this is hardly reconcilable with other passages. In § 241 he says: "Any comparison of two ideas, which ends by our finding their contents like or unlike, presupposes the absolute indivisible unity of that which compares them: it must be one and the same thing which first forms the idea of *a*, then that of *b*, and which at the same time is conscious of the nature and extent of the difference between them." What is this but arguing (I will not call it reasoning) from the unity of consciousness to a substance, a "thing" that "forms an idea"? It is the style of mythology. The unity of consciousness can have a "power of producing and experiencing effects" only if it is one of the phenomena related. But this it certainly is not. Common modes of speech would excuse a man's writing of the Soul as a Thing having a unity of consciousness in its activities; but there can be no excuse for describing the unity itself as a thing producing and experiencing effects, which are nothing but the consciousness of which it is the unity. Hence, Lotze has in fact inferred Substance from Subject. But we have seen that a relation between substance and phenomena or between soul and activity (if it can be thought at all) is not the relation between cause and effect: and still less is this the relation between the unity of consciousness and the phenomena of consciousness. The unity of consciousness neither acts nor suffers.

As to Kant's doctrine of Apperception, it is only intelligible in connection with the deepest thoughts of his philosophy, which are left in a sort of secret script to be deciphered as best we can. Every one knows how the Ding an sich plays hide-and-seek with us throughout the *K. d. r. V.*; but in the ethical and religious writings it becomes as manifest as words can make it. There we learn that the reality of our life and fate is *homo noumenon*; and we may easily suppose that there is a multitude of *noumena*, one for each of us, besides those of other rationals. But on reflection it must appear that this is

inconceivable; for *noumena* out of Time and Space cannot be many; there cannot be a numerical individuation, but at most a qualitative difference, and this only a moral one—holy and not-holy. That individual men, not only in this life but *ad infinitum*, are sensuously determinate is implied in the argument for immortality: *homo phenomenon* does not become a *noumenon* by death in this world, since it is the persistence of sensuous opposition to Reason that guarantees his own persistence.

The *noumenon*, then, is one with two aspects—the Absolute Reason, and *homo noumenon* who is fallen. The fall (we learn in the *Religion i. d. G. d. bl. Vernunft*) is a mystery, its origin unaccountable, and of course not to be thought of as occurring in time; but, seeing that evil is due to the influence of Sense upon Reason, we may suppose that *homo noumenon* is nothing else than the aspect of Reason in a sensuous world —whose self-diremption in Time and Space, or the 'taking of flesh,' is, as such, a 'fall' from Absolute Reason. Hence we may understand the objectivity of Reason in experience or Nature; which in the *K. d. r. V.* is such a monstrous doctrine, if we understand it as the constitution of Nature by the individual human mind. The individual, as rational, shares in the knowledge of Reason which is the law of Nature, but in his limitations only knows the outlines of the world-scheme, and must find out the details as best he can.

Now, pure transcendental original Apperception is the common consciousness of Nature, in which all objective knowledge resides; of which Time, Space and the Categories are the most general functions, but every detail of fact and relation is equally and as necessarily a function. Accordingly, it is widely distinct from the mere subjective empirical unity of Apperception. As the condition of the representation of objects in Space, it is the condition of the existence of any *homo phenomenon*; and, through Time and the Categories, it is the condition of the synthesis of his subjective experience and of the thought of its unity, even to himself. But the Categories are conditions of his thoughts as Laws of Nature; they are not his private organs of thinking; he must be

content to do his private thinking with the Schemata of Imagination. Hence transcendental Apperception itself is One in a qualified sense—not under the Category of Unity, not numerically then; and, therefore, if spoken of as Self-consciousness, this is also in a qualified sense; for 'self' implies others on the same footing, and what is above unity is above plurality, and else it could not be pure. In short, we may best interpret it as the Kantian Logos.

But as for the subjective unity of apperception, or empirical self-consciousness, yours or mine, it is merely a limited particular fact, and to make great ado about it is very unphilosophical. For it is far from being the whole even of oneself; since beyond it lies the vast region of sub-consciousness (much more than $\frac{9}{10}$ of oneself), and the period of infancy, and all the forgotten experience that once was conscious, and a considerable part even of consciousness as it flies. Kant fully recognises this in his *Anthropologie* (Book I. § 5); and even Lotze says (*Metaphysics*, § 241) that he does not "repeat the frequent but exaggerated assertion, that in every single act of feeling or thinking there is an express consciousness which regards the sensation or idea simply as a state of self; on the contrary, every one is familiar with that absorption in the content of a sensuous perception which often makes us entirely forget our personality in view of it." This is as true of attentive thought as of perception. Lotze adds: "But then the very fact that we can become aware that this was the case, presupposes that we can retrieve what we omitted at first, viz., the recognition that the perception was in us, as our state." How much can we retrieve? Often next to nothing of all that has passed.

I must not be supposed to contend that the above interpretation of Kant is borne out by every passage in which he treats of Apperception. Far from it: at the very outset the proposition, "I think accompanies every act of consciousness," suggests the individual unity, and is both false and misleading. He did not from the first distinguish clearly in his own mind the universal and individual unities; else he must have seen that the latter necessarily includes the sub-

jective unity of the internal sense. But, viewing his philosophy as a whole, I have given the only sensible meaning of transcendental Apperception; for the notion that this can be a function of the individual is so intolerably foolish that any other is comparatively sane.

§ 7. The esoteric Kantian doctrine of *homo phenomenon*, then, is akin to the ancient theory of emanation in the *Vedanta* and Neo-Platonism. Lotze expresses it (§ 246): "Nor again is it out of nothing that the soul is made or created by the absolute; but, to satisfy the imagination, we may say it is from itself, from its own real nature that the absolute projects the soul, and so adds to its one activity, the course of nature, that other which, in the ruling plan of the absolute, is its natural completion." Even in the history of English Philosophy similar doctrines have been held at various times by Cudworth and others; of whom the most recently interesting is the late T. H. Green. Green says (*Prolegomena*, § 67) that our consciousness "can only be explained by supposing that in the growth of our experience, in the process of our learning to know the world, an animal organism, which has its history in time, gradually becomes the vehicle of an eternally complete consciousness."

Apparently, the marks by which, according to Green, our consciousness may be identified with the Divine are five: (1) it is not itself in time, as may be proved by the very fact of its perceiving events in time; (2) in every act of consciousness it distinguishes itself from the content of its activity; (3) it is a unifying principle to the contents of consciousness by relating them together; (4) it is therefore an agent, and (5) a free agent.

All these marks, except the fifth (for which see § 77), are given in the following passage (*Prolegomena*, § 32): "Thus in order that successive feelings may be related in objects of experience, even objects related in the way of succession, there must be in consciousness an agent which distinguishes itself from the feelings, uniting them in their severalty, making them equally present in their succession." Many similar passages might be quoted: this is the essence

of Green's Metaphysics, and every position is gained by a paralogism.

For (1) human consciousness is entirely determined in time: not only are relations of succession cognised as such and by an actual succession of their terms in thought, but this is even true of relations of co-existence; and if there is any mysterious question here it is, not how succession can be presented as such, but how co-existences can be recognised at all. Green seems to have mistaken the "psychological now" for the *nunc stans*.

(2) That in every act of consciousness the agent (soul or ego) distinguishes itself from the content of its activity is (*a*) untrue, because in fact self-consciousness does not accompany every act of human consciousness. (*b*) There is probably here a confusion between the total empirical content of the ego at any time, which contrasts with any fresh feeling or cognition (if distinct), and the abstract Subject, which (as such) is never known at all. For (*c*) to suppose that the abstract Subject can be distinguished from any particular content, is to make it one term of a relation of difference, and therefore an object needing another Subject for its presentation (Third Man). The same objection applies to the description of the Unity of Apperception as the "correlate of all experience"; for a 'correlate' is a term related.

(3) Self-consciousness is not the unifying principle even in knowledge; for all knowledge begins with perception, and the integration of psychic elements in perception which gives it its significative character, is infinitely more ancient and profound than any individual human consciousness. Hence the unsatisfactory character of the psychological analysis of perception: hence the fact that the unity of perception is felt as depending on the object. At present the unity of perception can best be understood as a growth. Similarly, the integrations of instinct, habit, and even memory are growths, as truly as the physical tissues are. Memories, indeed, both in acquisition (as a rule) and in revival, are clearer and more analysable than the more ancient functions of the soul, but their connection or unity is not determined

by self-consciousness, but (rather) determines it. The inventions and discoveries of imagination and discursive thought, though they appear in consciousness, do not come by the routes of consciousness: the lines that signal and summon them run through the dark. What a shallow thing our explicit consciousness is we have not yet enough considered.

(4) To assume that the unity of consciousness is the activity of an agent, is precisely the paralogism of treating the Subject as Substance. "What is the use (poor Kant might ask) of writing, or refuting, or proving anything?—

> Were it not better done as other use,
> To sport with Amaryllis in the shade?"

But (5) that human consciousness should be a free agent is in conflict with the principles of Green's philosophy. Having inferred from human consciousness a divine Consciousness as sustaining the world, he finds that it must be timeless, uniting all existence in eternal knowledge, and in this aspect he calls it a "free cause." But he does not mean that it is a cause in any ordinary sense of the word by which some "separate particularity" is implied in cause and effect: for "the agent [divine Consciousness] must act absolutely from itself in the action through which that world is—not, as does everything within the world, under determination by something else. The world has no character but that given it by this action; the agent no character but that which it gives itself in this action" (§ 76). Now, how such a relation is possible we are to understand by comparing our own activity in knowledge; which is "an action as absolutely from itself, as little to be accounted for by the phenomena which through it become an intelligent experience, or by anything alien to itself, as is that which we have found to be implied in the existence of the universal order" (§ 77). But this explanation raises appalling difficulties. How is it possible that in knowing I should be a "free cause" of knowledge, seeing that the object known is always a fact of the eternal Mind? Whilst awake I necessarily know something, and must know it as it is. I cannot choose how I shall know a thing, and the thing

takes no character from my knowledge of it, nor is my character merely equivalent to my knowledge of the thing. In knowledge, then, man is not a 'free cause,' and does not help us to bring the divine Consciousness under that odd category. In experience *causa libera* is without example or analogy: it neither explains anything, nor can it be explained.

It is especially odd that any one should apply the adjective "free" to the Divine 'Agent' as above described. According to Leibniz, God was not free to choose any world but the best possible (namely, this one); and Green cannot have meant that the Divine Agent was free to cognise another world; for he explicitly asserts that "it has no character but that which it gives itself in this action" (knowledge of the world). This world therefore is not merely the best but the only possible one. And the Divine Unity of Apperception, as Green conceives it, cannot be an 'agent' at all. For agency implies activity, implies changes brought about; and this is impossible in the world known to such a Being, a world without beginning, or end, or process, or development, or decay.

Still, such a world, a *nunc stans*, being granted, it may seem a fair inference that it can only be represented in Time by an invariable order; and this agrees with Green's remark that "all results are necessary results" (§ 109). But then all human knowledge and actions are necessary.

We may conclude that there is no way of comprehending man as resembling the Divine Consciousness in being a free agent, unifying the object of knowledge from which it distinguishes itself as a timeless principle; and that therefore Green was right in saying that "the indivisible reality of our consciousness [at once divine and human] cannot be comprehended in a single conception. In seeking to understand its reality we have to look at it from two different points of view; and the different conceptions that we form of it, as looked at from these different points, do not admit of being united" (§ 68). This seems quite just; but things that "cannot be united in a single concept" have no resemblance, and can never help to explain one another. Such is the truth: and, having

perceived it, is it not astonishing that this most earnest, sincere and benevolent man should try to make an impossible conception the basis of human manners and of family and social life? Has the house of our life no foundation but this impalpable sand?

Unless a scheme of notions is in fact merely verbal, if it cannot be clearly rendered in concatenated concepts, there is no support for it but some sort of incoherent imagery. Theories of emanation are not merely verbal, and they cannot be clearly concatenated; but such words as 'emanation,' 'the absolute projects the soul,' etc., not only had orignally a physical meaning (in which, as in so many mythologies, 'generation' predominated), but they still retain it; and physical suggestions, half suppressed by habits of technical thought, are still that which gives them all the sense they have. In short, Emanation is essentially a materialistic theory, in spite of every effort to refine away its sensuous dross. If I am asked whether the ontological suggestions of this volume are purely verbal, or clearly concatenated, or vaguely imagined; my answer is that, so far as conceptual, the imperfect character of the concepts employed has been explicitly shown, and that nothing will be built upon them without fair warning; and that, where these concepts fail, there is a dim impulse of imagination to supplement the quasi-intelligible, which of course likewise fails, and, as far as it goes, is materialistic. But here, indeed, Materialism and Mysticism meet; for Mysticism is always an attempt to walk by imagination where perception has left no vestiges. This cannot be helped in any Ontology. The nature of human thought and language makes it impossible —once we quit the ground of immediate consciousness,—to imagine the non-material or to define it except by blank negations of materiality. And the remedy for this defect of thought is to find a way of looking at the World so as to see that 'Material-Spiritual' is a crude, strained and indefensible opposition. It is not a case in which any theory can be proved by the physical method and incorporated with the sciences, but one in which we have to consider, in view of the sciences and the whole of experience, what scheme of notions will best

serve us to fill up that background of experience which all admit to be obscure. Such is the purpose of these speculations.

§ 8. We have seen, then, that the ego or consciousness is not, and cannot be explained by, any Substance, material or spiritual. Hume and Kant (in his speculative Philosophy) recognise what are called the phenomena of the Soul; and, if interpreted dogmatically, they might be supposed to be Nihilists, denying any Substance; but if fairly treated as sceptic and critic, they are Agnostics, demonstrating the grounds of our ontological nescience. The sequel of Kant's Philosophy shows that this Agnosticism was unsatisfactory to himself; and it is so to me, as well as to many others who acknowledge the force of the sceptical and critical arguments. Therefore, I am recommending as the most coherent and natural way of thinking, on the whole, this hypothesis that the World is essentially a conscious thing; that in consciousness we have immediate knowledge of Reality, but not of the whole of Being; that the rest of Being is made known to us by phenomena; that it is everywhere conscious, but in various degrees, and that the higher degrees are known to us by the phenomena of organisation. In support of this view I argued in Chap. X. from the phenomena, and it has been necessary to show why other hypotheses are less satisfactory. It remains to consider, in this chapter, how it compares with other hypotheses in the account it gives of Perception and Volition.

Neither Materialism nor Spiritualism can give any account of perception or volition. To Materialism all consciousness is a miracle, and therefore so is perception: to Spiritualism no perception is possible, because there is nothing to perceive. Dualism, maintaining the reality both of a material and of a spiritual Substance, has, from Descartes to Hamilton, tried in vain to circumvent the truism that between Substances divided by definition there is no community. Our own way of representing these things, on the hypothesis that there is an intimate parallelism between consciousness and the rest of Being which is manifested in phenomena, such that consciousness may be considered as an activity of Being, may be put

in this way: Sensation arises when a disturbance in the transcendent Being of the brain is set up by changes in the Being of other phenomena; and perception is the integration of sensations that takes place under certain conditions in which one sensation becomes a sign of the others. An idea consists of perceptions and their associations centrally excited; that is, accompanying disturbances propagated from other parts of the Being of the brain. Volition, or the acting upon the idea of an action, implies a specific disturbance in the Being of the brain corresponding with the idea of the action, and a propagation of this disturbance by the Being of nerves and muscles into the outer world.

This story contains so many queer phrases that it asks some courage to write it; and, in fact, it would not have been written if I had thought that it expressed merely notions of my own. But, however crude the expression (and I have deliberately refrained from refining it), I believe it is the way in which many, perhaps most people now think, who have given any attention to Psychology and also to the recent progress of the physical and biological sciences. For they hold (1) that consciousness has no mass or energy; (2) that it cannot be explained by any other mode of existence; (3) that phenomena do manifest mass and energy; and (4) that phenomena (as such) are not the reality of Being. My account of perception and volition follows from these four propositions.

But how little I can venture to infer concerning Being that is not Consciousness, has been shown in Chap. VIII. § 8; namely, Succession, Change, Co-existence, Order. And amidst the contempt into which Ontology has now fallen it is lonely, wearisome and depressing to write about it. Once more let us return to the common daylight, to the fresh green fields of primitive credulity, to the great conjuring entertainment where seeing is believing.

CHAPTER XII

NATURAL HISTORY OF THE SUBJECT

§ 1. 'PHENOMENA of consciousness' is a convenient phrase in treating Psychology as a Natural Science, which is my purpose in the present chapter: for we must trace in outline the development of the rational life, without which there could be no Metaphysics. 'Phenomena of consciousness' is also a very natural phrase, for it is only by late reflection, and not without difficulty, that the conviction can be reached that in fact consciousness is not a phenomenon, but the direct and sole revelation of the ultimate Being of the universe.

Consciousness seems a fragmentary thing, not only by the intermissions of sleep and other lapses, but because each man has some first recollection, and it is always of something that happened a very little while ago; and a few relics of events from then till now are all that he directly knows of consciousness: like the bridge that Mirza saw stretching out across an unfathomable sea, many of whose arches were broken, whilst its further end was hidden in mist. We learn from others that we lived before we can remember; but they know us only by our bodies, as we know them; and it is only by expression, gesture, behaviour that we can infer anything of them or of the animals, upon which to poise still more hazardous conjectures concerning the rest of Nature. By such a dim and flickering lamp is the vast world warmed and illumined.

We have, therefore, no choice but to recognise human society and animal life and the sciences of these, as conditions of psychological inquiry: not that the psychologist fails to

make a full return for what he takes, but that his own experience is isolated, incoherent and meaningless apart from the environing and antecedent activities of other men and other animals. To understand the growth of any single human mind, we must begin with the inherited organisation and disposition to development presented by its body, and with the social circumstances into which it is born. And the psychologist's first problem is to determine, if possible, how much of a man's mental development is traceable to education and experience, and how much to the intrinsic maturing of the germ-plasm of his psycho-physical being.

This problem will not soon be solved; but I shall not disguise my own inclination to lay great stress upon the organic development, which is a growth of the body as a sign of the soul. Works of Psychology give elaborate accounts of how we learn to perceive objects and to will movements. I admire these writings, their penetrating insight and subtle analysis, and eagerly acknowledge how much I owe them. Yet they seem to me to describe what may be supposed to have happened in the infancy of our minds rather than what really happened. In my view we cannot properly be said to learn any of those things. We come to perceive objects by organic growth, before discriminating the sensations that are the ground of the qualities that constitute objects; and by the same means we acquire many voluntary actions before we are able to attend to motor ideas. Our interpretations are apt to be as anthropomorphically misleading in studying the mind of a child as in studying the minds of other animals. To perceive an object, to perceive it at a distance and to acquire control of the movements necessary to reach it, are all involved in the generic development of the neuro-muscular apparatus. Since that development is greatly furthered by a child's activities, which imply a varied consciousness, we easily regard such acquisitions as "outgrowths of the same experiences," as they would be were a child's mind like our own; but this is impossible. When the time comes for learning by experience, we already live in an orderly world, and are in possession of the general scheme of our faculties.

Our early growth is accompanied and influenced by experience, but is rapid out of all proportion to experience, and may be attributed to that inherent activity by which every seed develops according to its kind. Before birth far greater progress is made than during the whole of an individual's subsequent life; and this self-development continues for many years, is conspicuous again at puberty, and gradually slackens and ceases at ages varying in different races and in different men of the same race. Then come middle age and old age, considered to be especially the time of experience; but the essential characters of these periods express, no less than those of infancy, the individuality of each organism. Why do children of the same family, families of the same folk, various races of *homo sapiens*, grow up even under similar conditions with widely different abilities, aptitudes, characters? The whole range of capacity from idiocy to genius has little to do with experience.

The period of infancy in man is much longer than in other animals of equal bulk at maturity, and in some races of men, and in some men of the same race, longer than in others. As this is manifestly inconvenient, it may be asked why the period of gestation should not have been lengthened instead. Mechanical difficulties connected with the size of the head at birth may be alleged; but gestation is said to be already three months longer with man than with the gorilla. Longer gestation might have been inconvenient to savages (our recent ancestors) still nomadic; but it would have been safer for the offspring. Long infancy is favourable to the development of family life, and of active sympathy and affection, which are advantageous to a co-operative animal. All these are considerations; yet I think something must still be allowed for the necessity of thoroughly interfusing from the first the animal growths of perception and instinct with the growths that are stimulated by free activities in the beginning of experience, and with the gradual differentiation of the great plastic reserve in the cortex which corresponds with the specifically human powers of imagination and reason; though even these later

growths are controlled in their main features by inherited predispositions to organisation.

The human child, according to Romanes, at about the sixteenth month, reaches the gorilla's level of intelligence. The poor gorilla! Perhaps Romanes has a little antedated the success of our rivalry; for we know nothing about the gorilla's intelligence under natural conditions. However, thenceforward the proportion in which human development depends upon experience, as compared with the internal forces of organisation, increases. But to maturity and even to the close of life (as we see in the oncoming of insanity) it seems that the general type of intellect and character, as distinguished from the details of knowledge, accomplishment and behaviour, is a realisation of hereditary conditions.

§ 2. In the biological evolution of mind we first see the relation of its cognitive and active qualities in the sequence of stimulus and contraction; when a nervous system begins to appear this relation is concentrated in the reflex arc; and when the energy of reaction grows greater and greater in proportion to the energy of a stimulus, a release of intra-organic potential is implied to which the psychic parallel is feeling and emotion. Mr. Spencer has admirably traced and illustrated the development of the correspondence between the living mind and the conditions of its existence; he has shown how the correspondence extends in space and time, and increases in speciality, generality and complexity (*Psychology*, Part III.). Throughout, the character of the mental organism and all its powers and activities are conditioned by Natural Selection; whereby it becomes, through obedience, the interpreter of the law and reason of the world.

"The essential feature of living matter," says A. D. Waller, "is its instability." Every organic body is metabolic: it can only maintain its existence if a moving equilibrium be established between waste and repair, that is, as long as the anabolic balances the catabolic process. Every change in it, therefore, has a reference to some further change: this is its teleological character; and it is sanctioned by Natural Selection, which favours those forms that live best, and best conduct the

activities that preserve life. Self-preservation, said the Stoics, is the first effort of Nature. It is only by internal forces that inorganic compounds are preserved; but self-preservation, by the very process of change, is characteristic of the organic—by "the adaptation of internal to external relations." Hence everything, so far as it is conscious, always strives to live, to obtain food, to find its mate, to escape enemies or defeat them.

All activity is destructive and must be repaired; the individual dies at last and must be replaced: hence the appetites of hunger, thirst and sex. In the satisfaction of these appetites lies the primary interest and attention of animals: success is pleasure and "corroboration of vital motion"; failure is pain and enfeeblement.

In attention, all the organism is focussed, and all its powers are brought to bear on whatever is interesting. This attitude is certainly favoured by Natural Selection; and the same may be said for the primary functions of cognition, assimilation and discrimination. Assimilation is, in the first place, the ground of action; because, a known situation having been reinstated, an action formerly successful may be repeated, an action formerly unsuccessful inhibited; and the pleasure of former success reinforces repetition, and the pain of former failure inhibits it. By discrimination, assimilation is defined and guarded. At their first appearance in micro-organisms these functions have a quasi-chemical aspect; there the living thing blends with inorganic Nature; whilst, in the progress of animal and human life, we find them to have contained the germs of reason and science. Since, when we know what a thing is and where we are, we know also what to do, assimilation is pleasurable; and from this humble source is derived the impassioned joy of explanation.

When images begin to enter into the mental life, the difference between them and perceptions is a condition of sanity, and to this difference is proportioned the energy of their motor reactions. Images subserve foresight and adaptation to things remote; and their guiding power depends on the processes of Association; which are determined by Natural Selection. For association and suggestion according

to contiguity, correspond with the connections that make one thing a mark of another in time and place; and the confirmation of association by repetition ensures a tendency to think of things in some proportion to the frequency of their recurrence. True, these tendencies may be very misleading, and must often be destructive; but animal life is generally confined to a narrow routine in which approximate adaptation is enough for the species. Interest and attention confirm associations, because, in the routine life, that is interesting which is preservative. The unhappiness of human life is due to the failure of routine, and the persistence of primitive interests in conditions that require analytic reason and circumspect control, whilst these powers are still undeveloped.

§ 3. Whilst the adaptation of the organism to deal directly with things remote in space has reached a high degree of perfection in many animals, particularly in some birds of prey, its adaptation to deal with events remote in time is characteristic of man. Teleology, as we have seen, is inherent in all organic life, as a series or system of co-ordinated self-and-species preservative changes: this begins with the appetites; is carried further by many instincts having a remoter reference, in which there is a consciousness of the action and a strong feeling for it, but no distinct consciousness, or even none at all, of the end: in human life it is increasingly taken up into an explicit consciousness of ends and means, though this process is far from complete; I mean that human nature is still largely instinctive and full of ideas and impulses whose purpose it does not understand.

To deal successfully with events remote in time, there must be a certain spontaneous orderliness of thought or expectation, of which animals exhibit the beginnings; but, further, a power of discovering the order of Nature, laws of the relations of events, and of calculating their results with some degree of precision or probability—in a word, reason. Of this I shall speak presently; but here I draw attention to a third condition of the attainment of remote results, namely, the growth of corresponding feelings. Plato had regarded certain passions as the natural allies of reason, and even the later

Stoics found a place in their death's-head dogma for rational emotions. Aristotle saw that "thought moves nothing"; though his expressions are not always consistent with this truth; for he talks of desire being opposed to reason, instead of to the desire to act reasonably. But Spinoza was the first to see clearly that "a passion can only be controlled by another and stronger passion," and that the orderliness of our life requires the development of emotions fit for human nature; though the influence of Aristotle led him to put a too exclusive stress upon the philosophic nisus. We see, then, the inadequacy of defining man merely as 'rational': since reason must be unavailing without the growth of corresponding feelings, these must equally be differentiæ of human nature.

Perhaps it is not quite true that thought, or its physical process, moves nothing; it has some energy, but not enough to move twelve stone; for that there must be a release of potential, and therefore (where organisation is imperfect) a wave of feeling. But purposive actions arise in special situations, such as aggression and escape, and thence acquire a speciality of feeling. I take it that every special emotion is an integration of the algedonic experiences of actions of the same kind as those that they now reinforce and sustain. Under the influence of less specialised feeling, efforts to escape or hide generated the emotion of fear; habits of hoarding were the precondition of prudence; the practice of equal sharing gave rise to the sense of justice; and the worship preceded the love of God.

With the development of animal life adaptation to a greater and greater variety of circumstances becomes necessary; in man most, and especially in civilised man. Every situation, as determined by purposes and the relations of persons and things, has its own feeling; and therefore our feelings are shaded and blended in endless variety, so that Malebranche may have been justified in saying that perhaps no two men ever felt the same passion. Still, certain situations frequently recur which approximate to an average type, and there are emotions corresponding with such situations having a suf-

ficiently specific character to be readily recognised, though they cannot be precisely classified.

The emotions exist either to intensify expression, like Joy and Grief, or to reinforce action. The latter are either Impulsive, like Fear, Anger, Affection, which are common to the higher animals,—the interpretation of their apparent manifestation in the lowest animals is conjectural,—or Regulative in many degrees of co-ordination: the inferior degrees being shared by some animals, whilst the superior are proper to man, or even to some civilised men.

The regulation of action implies inhibition; and this may be due to the asthenic influence of an emotion tinged with fear, or dread, like Prudence; or to the fact that if one action is effectually reinforced all incompatible actions must be suppressed, as Justice suppresses Arrogance.

The regulative feelings, like the impulsive, are at first instinctive; that is, they direct conduct to an end without a distinct prevision of that end, and with most men such is still their condition. Quasi-rational, they help to secure the ends of reason during the immaturity of reason; they are provident without circumspection, and but for them, reasoning, even to the last, would be ineffectual.

Various emotions may be considered as specially subserving the interests of the Individual, the Family, the Tribe; but in a normal civilised man all emotions are socialised, or modified in the interests of the tribe or society.

Some emotions are concrete, like Love. Others are abstract, like Pride—the integration of all satisfactions in success of whatever kind, but especially in competition; or like Fairness—the integration of all satisfactions in proportionate dealing. The differential circumstances in either case cancel, and the common body of feeling remains with a corresponding reflex or expression, the stiffening of the spinal column or the opening out of the hands.

The social emotions are (1) Ego-altruistic, representing what we believe to be the feelings of others toward us, such as Vanity, Shame, Honour; or (2) Altruistic, sympathetic affections toward others, such as Pity, Generosity, Benevolence

(cf. Spencer's *Psychology*, Part VIII.); or (3) what I can only call Panic emotions, meaning that they depend for their development upon a sympathetic *rapport* of the tribe, such as Loyalty, Religion, Duty. If it be said that these last in their highest form, so far from having a panic quality, brace the solitary protestant and most shine against the face of tyranny and clamour, we must remember that this happens in few men, that it is not solitary where God is, and that every mental structure in its highest organisation attains a relative independence.

I need not show how all these feelings, though instinctive, regulate and rationalise our life; and this is not the place to show how all emotions, whilst they remain instinctive, involve more or less illusion, guiding the conduct of the individual to ends of Nature other than those which he proposes to himself.

Play imitates all the actions of life and, therefore, all its feelings. Hence every emotion is experienced in two ways: first, in earnest as a motive or reinforcement, and then in recreation. From the play-instinct the Fine Arts are an outgrowth with a panic inspiration, especially in the rhythmic Arts; and under this influence the emotions suffer a further transfiguration; grief turns to pathos, terror to sublimity, laughter to comedy. In this form their motive force is nearly lost; indeed, the possibility of its suspension is the limit of Art: whence the rule not to intrude poetry into oratory; which urges to do something, except the encomiastic. Still, indirectly, the Fine Arts are regulative, especially by enhancing loyalty, religion and personal ideals. They unite mankind; sympathy reconciles us most in suffering, but Art in rapture.

The effort to reason and to know, the more necessary as the interests of life grow more enduring, has its own instinctive passion—Curiosity. Plato and Aristotle traced the beginning of Philosophy to Wonder; but Wonder presides chiefly over the mythopœic stage of explanation: from which indeed Plato half emerges, like

> The tawny lion, pawing to get free
> His hinder parts.

Wonder wants the permanence that is requisite to sustain long and arduous research. Curiosity, derived from remote animal progenitors, and at first directly subserving the simpler needs of life, only finds its true field when the complexity of human society demands the discovery of general truths applicable to various circumstances, and at the same time makes it possible to carry out the division of labour between thought and action. To ensure the service of men at tasks the least directly and plainly useful, like those of Art and Science, Nature infuses master-passions into those whom she calls; who labour often unrewarded and careless of reward, accounting themselves blest in their toil; though to the bystander they seem a sort of victims. Becoming aware of this, they justify themselves by proving that science cheapens bread, cotton and pig-iron; but this is a concession to the illusions of the world; for amongst all the passions of mankind Philosophy alone is without illusion. Science truly is a condition of civilisation; but civilisation is for the sake of Science.

§ 4. Every man is born to develop a peculiar organic structure of impulse and emotion, more of this and less of that, through the whole range of feelings. Such a structure varies inexhaustibly from man to man, as faces and finger-prints do, and constitutes his character (the dominant tendencies of his reaction); so far as this can be distinguished, on the one hand, from behaviour, which is determined partly by experience; and, on the other hand, from temperament, which depends upon the cœnæsthesis.

In intra-uterine consciousness, wherein the feeling of nutrition and growth is contrasted with the sense of movement and resistance—or cœnæsthesis with kinæsthesis—begins the differentiation of Subject and Object.

The kinæsthesis accompanies all the special sensations, and becomes the connective tissue of the objective mind or Nature. It is that which every other sensation signifies; and because of the weight and resistance of my body, always pressing on the earth, the significance of perception is always reinforced by present experience: that star, that cloud, that

church is like this—this earth beneath my feet. My body itself is such a thing; such things favour or hurt the body and affect the cœnæsthesis. Hence the conviction of Physical Reality, and the necessity of the conceptual system of the physical sciences.

The cœnæsthesis is the original and the most permanent factor of subjective consciousness, the background of all changes of thought and feeling; so that some psychologists regard it as the essence of the personal life. But to me it seems rather to be the essence of subjectivity, and generic in character; too little individualised to constitute a person; who springs from it like a tree from the soil, or (say) like a leaf from the tree. The utmost subjectivity brings us nearest of all that we know to eternal and universal Being; but a man inhabits Time and Society. Expectation, memory, enduring interests, concatenated endeavours, achievements and plans mark out the cycle of his life, his individuality.

The living organism, moreover, cannot be understood merely as the Subject; it is the union of Subject and Object; for the kinæsthesis is as constant an experience as the cœnæsthesis; and hence spring our surmises concerning the truth of the World.

But neither can man be understood merely as an individual, for his interests are fused with other men's; sympathy signifies, as Schopenhauer shows, the kindred of mankind, and even of organic nature; and so do religious beliefs. Biological theory explains this by the continuity of all life in Time, which (as we say) is more real than Space, the divider; and doubtless the cœnæsthesis is continuous, derived from germ to germ.

Hence a man's personality is inseparable from the family and its possessions and traditions; and hitherto it has been inseparable from the Tribe or State. There, on the one hand, grows up a consciousness of the relation of self to others, according to rules implying responsibility and defining the individual; on the other hand, suggestion, imitation, education, emulation and specialised industry and rank, modify his individuality, and disguise his character by codes of behaviour. And further, since society is the greater part of every man's

environment, it operates selectively, eliminating those who fail to 'behave,' and thus determining the possible types of character itself.

Different social conditions, town or country; different constitutions, despotic or free, operate differently in the selection of character; and of all considerations bearing upon the comparison of social or political affairs, this is the most important to mankind. Mill thought that Democracy tended to favour uniformity and mediocrity of character, because he dreaded uniformity and mediocrity; Plato thought that Democracy produced the utmost variety and extravagance of character, because he hated Democracy and variety; and it is certainly odd that the worse motive should have prompted the better inference.

§ 5. Nothing so clearly proves the secondary and dependent character of the individual as a study of his appetites, desires, emotions; for they all refer to things or persons beyond him, in relation to which he endeavours, so far as he is aware of them, to adjust his actions, in order to save, or to better, himself, his family, his tribe. His actions depend upon what he is aware of and what he is capable of desiring; neither of which can be arbitrarily altered. Nay, his desires further determine what he shall be aware of; confine his eyes within the deep-trodden lane of customary life; or if he ever looks over the hedge, determine what shall interest him in the world around, and therefore what he shall see there. Hence in the quality and limits of our desires lies the true poverty of human nature: it springs from a poor root.

A few generations ago we were little better than savages: a few generations farther back, and what then? If the state in which we live is civilisation, it has come too soon; we have not had time to prepare for it. The reign of man has been established before he is fit to govern. Power has been acquired over Nature; but for most men there is no further use for it than to provide a frivolous variety of satisfactions for the same cravings of the same soul that 5000 years ago was happier upon a kitchen-midden.

So unready are we that every country swarms with

thieves, harlots, faith-healers, gamblers, idlers, miracle-mongers, quacks, politicians, and all sorts of parasites and impostors. And for the rest of men, or not much less than half, who can give a sincere reason why they should live in such toil and darkness? For some indeed there is ease and comfort,—a noble result of Nature's travailing and groaning; for a few there is even wealth and ostentation. There is social gaiety, possible by the grace of oblivion. Philanthropy, more truly honourable than hopeful, and Art and Science remain.

Nothing is more depressing than the poetry of magic and devil-conjuring: there we see the hero armed with supernatural power, and helpless because he remains himself. Hence Shakespeare treats such power ironically: Prospero makes an exalted marriage for his daughter, and recovers the duchy which, when formerly possessed, was never valued. Superstitious prejudice, exasperated by the Renascence, produced the legend of Faustus; and Marlowe's genius cannot disguise its fatuity. According to Goethe, Faust escapes the devil and satisfies his own soul by reclaiming waste land and founding an industrial colony. We find with some disappointment that the devil cannot help us to anything that cannot be done without him. The same thing happens when epic poets, from Homer to Milton, treat of the gods. The gods, it seems, have the same narrow interests as we have; or, indeed, narrower; for to idealise is to impoverish. So there is no escape from our lot; even imagination is as helpless as the devil. Popular pictures of Heaven would be extravagantly comic, if one did not reflect how desirable must seem eternal rest to the weary, clean linen to the dirty, and a decent participation in glory to the down-trodden and despised.

I do not suggest that human nature is always the same; far from it: but progress is slow, the average man of a race advances little in 3000 years; the head of the procession drags after it an appalling tail, and sometimes there is retrogression. There has been during the last 100 years. For it is an obvious truth that whenever any species has unusual facility in getting a living, it degenerates; since many poor specimens then survive who, under normal difficulties,

must have perished. This is the condition under which the population of North-west Europe and America, by the aid of machinery and expanding industries, has so rapidly increased. It cannot continue indefinitely, but will probably end in a period of remorseless selection and misery. Modern industry has done nothing for human happiness; but it was necessary to the inventing and perfecting of scientific apparatus.

§ 6. As our character determines our actions so it determines our thoughts; for thought is a kind of action. Character, that is, determines our thinking, so far as we are able to think; but the ability to think depends upon the plan or structure of that which thinks, or upon its original disposition to produce such a plan. As we are now speaking of phenomena, this means that the ability to think is objectively represented by the plan and structure of the brain. I suppose that every brain has a certain innate disposition, generic, specific, individual, to develop certain connections of its tracts or sub-organs; and, in the case of the higher animals and man, an aptitude for falling from time to time into new combinations, which constitute a further development of its structure (if confirmed) and exhibit the same specific or individual traits. Plasticity of structure corresponds with originality of thought.

At first, all cognition and thought merely subserves the organism, as a lamp before the footsteps of desire. Then with the adaptation of man and society to more and more remote conditions, thought discovers the objects of our true desire; that which is good for us on the whole, co-ordinates best our conduct, is consented to by the preponderant weight of our character; which implies the inhibition of "chance desires" that tend to frustrate the attainment of that good. Meanwhile, in these labours thought becomes self-impassioned and obtains strength to lead its own life; and we learn that he who would discover truth must have in view no interest but truth.

Adaptive intelligence begins not from reflex action, nor from instinct, but from expectation, which is a simple outgrowth of perception: differing from it in this, that some interesting factor of an experience-complex is deferred. Expectation is not a projection of conscious memory, but of

experience; for the predominant course of the stream of consciousness is forward; the primitive movement of attention is watchfully forward; at the lower levels of life no power is possessed that is not useful, and memory (as distinct from retentiveness) only becomes useful when there is sufficient fulness and plasticity of mind to compare and discriminate, and so to adapt conduct to new cases by the light of the old. It may be, indeed, that primitive expectation is not even illuminated by an idea of that which is expected; for it seems enough that there should be an attitude of preparation, and a subactivity of certain nervous tracts facilitating the perception of certain objects, and inhibiting all actions excited by irrelevant objects. Certainly expectation is exhibited by animals much lower in the scale of organisation than the level at which evidence can be found of dreaming, hallucination, or home-sickness: the three criteria of the capacity for free ideas according to Romanes,—the last of which is questionable (*Mental Evolution in Animals*, chap. x.).

From this lowly stage of adaptive intelligence, the rise of memory and free generic ideas, or recepts, leads to "reasoning from particulars to particulars"; that is, to a judging of the present in the light of parallel cases recalled. Not that such reasoning supersedes the early expectant judgment; for this still serves us well, even after the last stage of reasoning has become possible by means of principles, generalised or abstracted from aggregates of remembered or recorded experience, and methodically verified.

§ 7. Generalisations concerning the relations of things and events are possible only by means of language; and, therefore, if generalised thought is a human differentia, society, in which alone the growth of language is possible, is older than man. This truth, that man never by contract or otherwise formed society, but that society is older than he, and that from the first he has grown up and been moulded in all his traits in relation to society, is of the utmost importance to Moral Philosophy; but what we are here concerned to note is that the language that has developed in social life is the necessary organ of Reason.

That we should reason chiefly by means of language seems a superficial and probably deceptive arrangement, and in fact so it is; but the possibility and even necessity of it appears when we consider that the advantage of economising time and energy has imposed a symbolic character on all mental operations. The reasoning by means of signs is not an unintelligible change in the process of mental growth; we find the same thing in perception, where (normally) visual sensations are the signs of complex objects and motions; and in memory and imagination, not only as derived chiefly from vision in most of us, but also by the use of fragments of images to signify extensive tracts of potential representation, or of words to supersede even the fragments of images. This is the condition of that "quickness" commonly ascribed to thought; for if in such processes of representation we could not be content without reviewing the whole phantasmagoria of our associations, thought would by no means be quick. And the same device facilitates volition: for the most part it is only in acquiring control of an unused muscle, or of a new muscle-grouping, that ideas of actions are explicit in consciousness; but otherwise they are taken for granted,—complicated with the idea of the end to be attained, as the weight of an object is complicated with its visual presentation,—whence the transition is easy to secondary automacy.

In all these cases the effectiveness of abbreviation depends upon the strength of integration or association between the signs and the facts signified. Without this condition, reasoning, whether with ourselves or with others, could not, as it often does, take the form of a verbal continuum, comparable with the visual continuum that, as we look round, presents to us the realm of Nature. Accordingly, the fitness of language to lead our thoughts is ensured by its three-fold roots in the mind and a corresponding intricacy and pervadingness of association: namely, as received by the ear, as articulated, and as seen by the eye—not only when written but in lip-movement and in the accompanying gestures and expression. And being in all these ways, but especially in articulation, an active experience, it is an apt organ of attention and of universal control.

Still, whilst language is an indispensable organ of human reason, it implies the existence of a reason of which it is the organ, that is, the organisation of the mind as a whole, which has come into existence for the use and for the sake of reasoning, because the world itself is orderly and predictable. Spencer has given the most elaborate account of the growth of this organisation: see his *Principles of Psychology*, especially Part III., on Mind as a Correspondence, and Part V., on the Evolution of the Nervous System; also Part II. chap. ii., on the Composition of Mind, and Part VIII. chap. iii., on the Development of Conceptions. The chief defects of his theory are its extreme abstractness, as if the process of development depended not at all upon the endeavour of the individual mind to know; and its giving no part to language itself in aiding the evolution of Reason.

The essential features of rational organisation are, on the one hand, the perceiving, imagining, thinking as totalities those things, events, ideas that have a physical or logical cohesion; and, on the other hand, the discriminating and identifying as such the properties and relations of those totalities. Both these processes, grouping and abstraction, whatever crude beginnings of them may exist in the animal world by the "logic of recepts," depend in the degree in which they are performed by ourselves upon the words and constructions of language. The groupings range from such simple percepts as "stone" or "flying bird" to such complex ideas as "History of Rome," "Astronomy," "Self," "World"; the abstractions range from such recepts or generic impressions as "sweet," or "edible" to such categories as "gravitation," "number," "equality"; and it cannot be supposed that the later terms of these series could possibly be fixed and manipulated without language.

In considering the rational organisation of experience by grouping and abstraction, or synthesis and analysis, it is usual to confine the term reasoning to the analytic process; but, in fact, the two processes are inseparable. High abstractions imply vast aggregates of experience to be compared, and the aggregates themselves, though largely formed by associa-

tion, are extended by inferences, and limited by discriminative judgments. According to Wundt, to reason is to analyse a total idea that has been formed by "apperceptive synthesis" (selective attention); but this is too narrow a view. We do, indeed, analyse an aggregate idea, as we do a percept. We analyse (say) an orange, by attending to its visual properties, prepared to grasp whatever other properties suggest themselves. Similarly, we may attend to the sign of an aggregate idea (usually a verbal sign),—say, Cartesianism,—and note the contents that suggest themselves,—initial doubt, certitude of self-consciousness, innate ideas, mutual exclusiveness of thought and extension, etc.; and further, the relations between those ideas that constitute the total, and which, like the whole, are known to us by their verbal signs. But the more original functions of reasoning are the breaking up of aggregate ideas erroneously formed, and the building up of others upon juster conceptions of community; for example, to judge that the idea of Monarchy as including Constitutionalism and Autocracy is superficial and misleading, and that the true connection of Constitutional Monarchy is with Republics: or, again, the identification of aggregates commonly assumed to be opposed; for example, to judge that human life, animal life, and plant life agree in this, that Malthus' law of population is equally true of them all. It could be shown, I think, that our advances in reasoning, including the great scientific discoveries, conform to these types.

When aggregates are named they are apt to acquire not only unity but isolation; more especially when their names signify opposition, the aggregates they stand for have a mutual repulsion. Words spread a sort of skin over their meanings: such ideas as buying and selling, rational and brutal, mind and matter, become so strongly delimited, that until the barriers are broken through by some exceptional nisus of thought, there is an end of understanding.

The faculty that carries forward this disruptive and recombining process is the primitive function of discrimination and assimilation, raised to various powers under the name of abstract thought. William James happily describes the

procedure as "dissociation by varying concomitants." I believe the credit of first explaining the matter is due to Hume in his *Treatise*, Book I. Part I. § 7, *Of Abstraction*, especially the last two paragraphs on the "distinction of reason." When any quality or relation is repeated amidst complex experiences that otherwise vary, it attains a quasi-independence; and the same is true when a quality varies amidst complexes otherwise constant. In either case, attention is attracted and assimiliation is accomplished; and thenceforth the identification of the quality or relation is facilitated should it occur in further experience. Its fixation is assured by a name or proposition.

The primitive function of assimilation is therefore also the ground of the explanation of Nature; for this consists in the progressive identification of the properties and relations of things and events under all the disguises of variety, and the co-ordination of them in a system of concepts and laws, the most general or abstract of which are called Categories and Axioms.

We have now considered self-conscious reason as arising in individuals in the course of nature by natural laws. If this is the explanation of the individual, it is also the guarantee of the reality of the World. In no other way is that explanation and guarantee possible; no otherwise can the knower be related to the known; and only so far as there is law can there be any system or any truth. The development of reason carries with it the criteria of truth: it becomes clear and definite, excludes contradiction, presupposes uniformity, and tends to establish universal consent.

Whether, or in what sense, the World itself is to be thought rational, we are not yet ready to discuss. To declare that that which reason interprets must be rational, may be rash and even impious. Discursive reason is tentative and fallible; in Nature there are no paralogisms nor "provisional hypotheses." But if it be hazardous to speak of the World as Universal Reason, at least we are sure that it is the ground, the measure, the law, the judge, and in every way the superior of human reason.

BOOK IV.—THE CATEGORIES

CHAPTER XIII

ABSTRACT CATEGORIES

I. *Relation in General*

§ 1. In Formal Logic a Judgment is analysed into two Terms (subject and predicate) and a Relation between them (marked by the copula); and it is usual to speak of subject and predicate as concepts, but not to call the relation between them a concept. Yet it expresses the same judgment to say 'A is like B,' or 'A and B are alike'; 'A is the cause of B,' or 'A and B are cause and effect.' Thus the relation of the terms is turned into a predicate, and so becomes manifestly a concept. It is true, though not immediately relevant, that, as Hamilton says, every concept, though in the place of the subject or predicate term, itself involves relations, and is a "fasciculus of Judgments." Now the Metaphysic of Logic is a reflective evaluation of conceptual knowledge; but of course it examines not all concepts,—an infinite task,—but those that are variously called the highest, or most abstract, or universal, or fundamental; and such are the concepts that are most conspicuously relations because commonly in the place of the copula in judgments: wherefore Kant called them "judging concepts"; and, following him, it has become fashionable to call them Categories.

The recognition of Relation as the nexus of all judgment and knowledge is a late result of analysis; it was, I believe, original with Locke, and is one of his chief services to Philosophy. Plato had reckoned some relations amongst the Ideas which he regarded as constitutive conditions of experi-

ence; Aristotle had given Relation the fourth place in the list of Categories. But the vague logical copula was for ages allowed to disguise with superficial facility both the true unity and the variety of thought; so that, although Locke's doctrine was illustrated and reinforced by Hume, Kant, misled by his admiration of the Scholastic Logic, treated Relation as only one genus of the Categories; although Relation is as essential, if not as conspicuous in the Categories of Quality and Quantity as in Substance and Attribute, Cause and Effect. Moreover, whilst indicating a special connection between the three categories of each genus, he declared them to be all equally original and independent. Hegel, following Fichte, added to the number of the Categories and pretended to deduce them one from another in a series, beginning with Being and ending with the Idea (or Thought of the Universe), by a necessary process of dialectic. But no enterprise was ever more irrational. The argument is sometimes fallacious, depends often upon bare assertions and arbitrary definitions. Relation first emerges under the rubric of Appearance, and is naïvely investigated in special cases after having been assumed again and again: being in fact the nerve of every dialectical process, since this takes place (by the way) in the mind of some thinker, not amongst Categories *in vacuo*. But recent Psychology and Metaphysics agree in restoring Relation to its true place as the essential character of apperceptive consciousness, the universal of cognition and thought of thought.

§ 2. The Categories, or most general forms in which men judge, are, then, the object of our present inquiry; and, first, Relation itself, whether it is clear or (in other words) possible; and, if so, whether it is valid: for both points are disputed.

In the *Theory of Logic* (chap. ii.) I observed that "A relation cannot be defined, for we know of nothing more elementary. The only way of bringing it to light is by contrasting it with its co-ordinate abstraction, the term. Every relation lies between, or connects, or ties two terms, and no more. All terms are connected and tied by relations. * * * The world consists of related terms or terminated

relations. This seems to be the end of all analysis, whether of the Object or Subject." In this somewhat figurative way I sought to express the necessary form of all judgment; and I still hold that every sound Logic or Metaphysics of Logic must make this its starting-point. Accordingly, it was a great satisfaction to find that in *Appearance and Reality* (chap. iii.) F. H. Bradley takes a similar view of the indissoluble co-implication of these elements of thought. He says in § 1: "Qualities are nothing without relations. *** We have seen that in fact the two are never found apart. We have seen that the separation by abstraction is no proof of real separateness. And now we have to urge, in short, that any separateness implies separation, and so relation, and is therefore, when made absolute, a self-discrepancy." Nothing can be truer or better stated; nevertheless, he finds the conception full of intricate puzzles.

In § 2 he writes: "We have found that qualities without relation have no intelligible meaning. Unfortunately, taken together with them they are equally unintelligible. They cannot, in the first place, be wholly resolved into relations. Hence the qualities must be, and must also be related. But there is hence a diversity which falls inside each quality. It has a double character, as both supporting and as being made by the relation." To recognise these two aspects of the quality is, of course, to relate them; and then each aspect may be treated in the same way; and the process is endless.

But why should the process begin? For a quality to "be" and to "be related" are not two facts: to treat them as different is a breach of the conditions already laid down, that "qualities are nothing without relations." To treat the being of a quality as distinct from its relatedness, is to make abstract separateness absolute, and leads (as foretold) to self-discrepancy. Whose fault is that?

In § 3 we read: "We may briefly reach the same dilemma from the side of relations. They are nothing intelligible either with or without their qualities. In the first place, a relation without terms seems mere verbiage, and terms appear, therefore, to be something beyond their relation." A relation

without terms is "a false abstraction, and a thing which loudly contradicts itself." "But how the relation can stand to the qualities is, on the other hand, unintelligible. If it is nothing to the qualities, then they are not related to it at all; and, if so, as we saw, they have ceased to be qualities, and their relation is a nonentity. But if it is something to them, then clearly we now shall require a new connecting relation. For the relation hardly can be the mere adjective of one or both of its terms; or at least as such it seems indefensible. And, being something itself, if it does not itself bear a relation to the terms, in what intelligible way will it succeed in being anything to them?" This process also is endless.

The dilemma assumes that a relation must be either "nothing" or "something" to the qualities; and then comes proof that it can be neither: therefore, the notion is unintelligible. But the whole process depends upon our forgetting the original position that terms and relations imply one another. When it is said, "If it [the relation] is nothing [or something] to the qualities," are we to understand by "it" the relation considered in abstraction from the qualities, or the relation in actuality along with the qualities?

In the latter sense (the only legitimate one) the supposition is—'if the relation of qualities is to be *nothing* to the qualities as related, they are not related at all; if *something*, we require a new connecting relation.' But these horns are only made of paper: for the *relation of qualities* and the *qualities as related* are the same thing; so that the supposition of one being nothing to the other, or of their needing further relation, is merely supererogatory.

If, on the other hand, we are to understand by "it" the relation considered in abstraction from the qualities, this is precisely what has been condemned (quite justly) as a "false abstraction." Yet now it is described as being "something itself," and "bearing a relation to the terms," apart from which, we have just been told, it cannot be conceived at all. The fact is that the author, after having declared terms and relations, taken severally, to be false abstractions, is still a

victim of the natural illusion that separate words imply separate things, and that therefore terms and relations must be such things. His whole argument is a misapplication of the 'Third Man': which always consists in showing that a certain position involves the "finding new relations without end." But the position against which this objection is valid is always a denial in some form that 'relation of terms' is ultimate: such a position as Plato's Idea, or Green's Self-consciousness, or Spencer's Absolute. The 'Third Man' shows that relation of terms is ultimate; and the third chapter of *Appearance and Reality* shows the same thing: but this is a very different matter from the showing that 'relation of terms' is unintelligible, which was the point to be proved.

Some light may be thrown upon this matter if, instead of illustrating related terms by A-B, we take a particular case, such as *greenness* and *transparency*, terms related as *coinhering* in emerald. Suppose it to be said that we may take either term and compare it with the relation, say, *greenness* with *coinherence*; and that as the relation of difference then emerges, we may again take this and compare it with either term; and so on. But there are some oversights in this dialectic. For, first, in comparing *coinherence* with *greenness* we are not comparing a relation with a term; *coinherence* has become a term in the act of comparison. To overlook this is to assume that relations are self-existent things or species; whereas they are functions of thought, so that a relation of terms in one process may be the term of a relation in another. But, secondly, the relation of difference emerging from the above comparison, is not a new fact; for it was involved in the original thought of *greenness* as a quality related to another by *coinherence*. This rests upon the classification of the elements of thought according to their functions into terms and relations; and this is justifiable because "separation by abstraction is no proof of real separateness."

The abstract consideration of terms and relations is only possible by means of language. We have here the extreme case of the 'distinction of reason.' Starting from the position that Relation of Terms is ultimate for thought, there is no

difficulty in seeing how either terms or relations may acquire a quasi-independence. We need only reflect that, though there are no terms unrelated, yet each term may stand in many different relations to other terms. Hence it is independent of any particular relation or relationship; and this is the nearest we can get to its *being* as distinct from its *being related.* Similarly, any general relation is independent of any particular terms. As red is unlike yellow and also unlike green, and yellow is unlike green and also unlike blue; and as the tone C is unlike D, and D unlike E, and so on through all orders of phenomena; it becomes possible, by means of words, to think of Unlikeness apart from any given contrast, although without supposing some terms the word is meaningless, or (as F. H. Bradley admirably expresses it) it is a "false abstraction."

He says, "The conclusion to which I am brought is that a relational way of thought—any one that moves by the machinery of terms and relations—must give appearance and not truth." And with this position, if it means that relational thought can yield only relative not absolute truth, I have no quarrel; for it is a familiar doctrine of the good old-fashioned Empirical Philosophy. And I agree heartily when he adds: "Our intellect" (that is, the Absolutist's intellect) "has been condemned to confusion and bankruptcy"; for, in fact, it never yet honoured a single draught.

The Absolute, I believe, is a whole without internal contradiction; and knowledge of the Universe as a whole will not be obtained in this or the next generation, even if thought do not involve an infinite regress. Whether our knowledge involves an internal contradiction, is indeed a serious question; but an infinite regress is not an internal contradiction. And, odd as it may seem, relation is the one thing that can never be self-contradictory; for the Principle of Contradiction runs: It is impossible for anything to be and not be in the same relation. The principle, therefore, applies to terms as related, and assumes the validity of relation; and this is the same thing as to say, what is obvious and trite, that the validity of relation cannot be denied, except by a judgment that takes it for granted.

§ 3. If the concept of Relation is clear and valid in the sense of being free from internal contradiction, it still remains to inquire into its objective validity: do the relations established in apperception correspond with Reality? We saw in Chap. VI. (§ 1) that Spencer disputes this. In the passage there quoted he says, that our sense of the difference of two colours corresponds with nothing in the outward fact; for it is merely a change of our consciousness, whilst the colours remain unchanged. From the context, however, it appears that by "two colours" Spencer means two "objective agencies unknown and unknowable" (*Princ. of Psych.* § 93).

It is of no use to ask how any one can know that unknowable agencies are two, are mutually independent and are unchanged. It is a desperate question. But confining ourselves to a consideration of the correspondence between Judgment and Empirical Reality, I venture to say that, when two colours—say red and blue—side by side are seen by us to be different, to find whether or not there is any consciousness of them and of their difference other than that of organic Subjects, is a problem, if not a very prosperous one, and not an occasion for dogma.

Further, to speak of the relation of such colours, "as we think it, being nothing else than a change of our state," is to give a very inadequate account of the matter. Such may have been the germ of relational cognition in primitive organic consciousness, but for us at present the consciousness of red and blue is an essential part of the consciousness of their difference. Sense-qualities, from the multiplicity of their relations in an experience coinciding with the differentiation of the organism, have become independent of any particular relations. They cannot be resolved into relations; the older doctrine of Psychological Relativity, according to which even every sensation varied with its context, was much overstated: it confused the sensation with the relations in which it is known. But the progress of organic consciousness is toward fuller and more definite knowledge: manifestly, red and blue and the other sense-qualities exist in Empirical Reality, and our perception of their differences is based upon that fact. In

other words, things are objectively different, whether there is an objective non-organic consciousness of their difference, or whether non-organic consciousness is non-relative.

The validity of Relations, as corresponding with facts of Empirical Reality, is confirmed by tracing the correspondence back into the Conceptual System. That the grounds of our relative judgments are facts and not merely cognitions, is implied in all scientific inquiries, and confirmed by every verification of any hypothesis or calculation according to the Physical Method. That the Demiurgus, as Plato puts it, mingled the Same and the Other with the essence of the World, is not a mere hypostatisation of intelligence or of the principles of explanation; it is the condition of intelligence and of the World's Self-knowledge.

§ 4. Terms that may be related are all things whatsoever: bodies and their qualities, sensations and all subjective modes, positions in time and space and all relations themselves. Relations related have, of course, their own terms, express or implied, which may be other relations with further terms. It is not to be understood that all pairs of terms may be related in all ways: a body cannot be definitely *like* a pleasure; a position in time cannot be *sequent to* a position in space: but any terms that are not related in other ways are still *different* in a common consciousness: and this common ground of all comparison in consciousness is signified by the differentiation of all sense-organs from a common origin in the cells of the epithelium, and by the co-ordination of all organs of the cortex.

Hume was unfortunate in describing Difference as "rather a negation of relation than anything real and positive"; for certainly it is as real and positive as Likeness; and, although less fruitful in positive results, it is, as Henry Sidgwick shows (*Philosophy, its Scope and Relations*, Lect. I. § 3), equally important to Philosophy. Spencer's view that Difference is primordial in consciousness, and that Likeness is at first of a comparatively negative character, as the cancellation of a Difference (*Psychology*, Part VI. chap. xxiv.), is interesting; but Metaphysics is chiefly concerned with mature

and explicit judgments in apperceptive consciousness. There Likeness and Difference are upon the same footing: both clear, each having its distinctive feeling, neither resolvable into the mere absence of the other.

Apperceptive consciousness and the analysis of judgment and reality into terms and relations seems to be possible only by means of some sort of language or appropriate signs. It is indeed an important truth that relationality is implicit in perception and in all modes of organic consciousness; but it is questionable whether the highest sub-human mammalia are capable of explicitly recognising it; picture-thinking (or 'reception') seems to limit their powers (see Lloyd Morgan's *Comparative Psychology*, chap. xiv.). Even in the simpler forms of language the apparatus of comparative thought is extremely imperfect, and is eked out by gesticulation; and the growth of language is marked by nothing more emphatically than by increasing power of expressing relation: whether by more precisely determining the relative places of words, by inflections, by specialised words (prepositions, conjunctions, etc.), or by the differentiation of names for relations themselves (equality, coexistence, etc.), a process continually carried further in scientific terminology.

As for the names of relations, they are derived from concrete terms and point to perceptual comparison as the original ground of thought. Likeness is from A.S. *lic*, the body; alike (A.S. *onlic*) indicates agreement tested by superposition. So, 'it likes me' means, it suits or fits me. Equal is 'as one'; same, similar, resembling, simultaneous, all primarily meant 'together,' hence matched; whilst different meant 'put asunder.' Comparison, in short, as the word itself suggests, begins with an actual distribution or arrangement of objects; and, as we now see in a Museum, this is still necessary to exact knowledge. Yet, contrary to every one's experience, it has been supposed that relational words subserve the expression of pure thought: so that bad Metaphysics, rather than Mythology, deserves to be called a "disease of language."

The fact is that the Categories take their rise in human perception,—which is not a separate thing from human

understanding, and therefore may itself be classificatory and apperceptive,—in the direct attentive consciousness (at once analytic and synthetic) of Empirical Reality. This is the strength of Kant's position, that the Categories constitute Nature, for there they must be sought and justified. But Kant treats them as primarily forms of pure understanding; and so can never bring them home to the experience of the individual, except by the vicarious Imagination.

To attempt to systematise the Categories by abstract reason has the worst character of Scholasticism. It assumes the possibility of a purely deductive method, but there is no such thing as abstract deduction; every logical process arises out of unfathomable depths of experience. In this sense Empiricism is re-established. The term 'Empiricism,' indeed, is now sometimes used as if it stood for a doctrine of the complete passivity of the Subject in experience. But this makes it meaningless; for such was not the position of Locke or Mill, and cannot be the position of any physiologist. If 'Empiricism' is thus employed by those who are essentially Empiricists but wish to avoid classification, I sympathise with any one who dislikes being labelled. The name of a School is usually a nickname for each of its members. But I do not sympathise with the avoidance of a nickname by any one who does not repudiate it also for his allies. Let every man take what name he pleases without prejudice to others; or let him, if he likes, like a savage, conceal his true name to avoid cursing and incantation.

To look for the Categories in Empirical Reality saves us from the absurdity of presuming that the system of them (that is, of the World) already exists finished and round for human reason. We must often ask not merely how the Categories are thought but how they ought to be; since many scientific controversies are concerned with definitions—as of 'force,' 'cause,' 'species,'—and such controversies can never be ended except in full view of the perceptual World; which to explain is the test of the conceptual system.

The appeal to experience also saves us from the whim of attempting a linear deduction or any formal scheme of the

Categories. Not only in psychological history but also in logical dependence, the Categories branch out in all directions, like a family tree, from common roots. No doubt it would be a relief to arrange them in a square, like the elements; or in a circle, like the serpent, tail in mouth. Dichotomy seems to save the labour of learning anything; triads lend a colour of romance to pure reason. But the expectation of greater symmetry than exists in Nature, is justly classed by Bacon amongst the Idols of the Tribe.

§ 5. If the category of Relation is clear, it cannot be by force of definition; for, of course, the ultimate form of all cognition cannot be itself defined. And the same is true of Likeness and Difference, and even of their specific modes in simple judgments of Time, Quality and Quantity. They are abstract intuitions, analytic growths (according to the universal process of abstraction) from the experience in which they are implicit, and where they are now perceived by their own assimilative power.

According to speculative Psychology, the beginning of organic consciousness is a change of consciousness; and this implies (*a*) a Succession of states, which in the course of mental development becomes known as a Difference and Succession in Time; and (*b*) a difference of states, which becomes known as a Difference of Quality or of Quantity. In adult consciousness every experience either involves a change, and therefore Succession and Difference; or, if Difference be instantaneously apprehended, it is by an organ which has been developed and trained to interpret simultaneous experience as equivalent to that which originally could only be learnt in succession. And differences are still most clearly apprehended when experienced in immediate succession. In such experience therefore, whether the Difference or the Succession is attended to, depends upon the direction of our interest. Whether the difference is of Quality or Quantity, is an ultimate contrast of experience: Quality has not here the sense of 'reference to a Substance,' but is a certain aspect of terms that may vary in certain ways, in contrast with another aspect of these terms (or others) that vary in the

characteristic way of Quantity, that is, more or less. There is no defining power in these sentences: all the expressions imply one another.

Relations of Time are:—

(1) Succession, or Difference of Time.

(2) Contiguity, or immediate Succession.

(3) Interval, where succession is not immediate and we are interested in the terminal changes.

(4) Duration, where we are interested in the experience that fills the interval.

(5) Simultaneity, or Likeness in Time; a relation applicable only to events, not implying place or more than instantaneous duration.

(6) Co-existence, or Likeness in Time, predicated of bodies, qualities, or positions in space, and compatible with unequal duration of the terms.

(7) Coinherence, a relation especially of the qualities of a body, generally implying coexistence, but not necessarily.

Relations of Quality are indicated by several names whose precise reference has never been determined. Even Likeness is ambiguous; but I cannot enter here upon a long psychological discussion. Whoever would examine the matter should turn to E. B. Titchener's *Instructor's Manual of Exp. Psych.* § 14, and the references there given.

(1) Likeness and Difference are the most general expressions of qualitative comparison.

(2) Sameness is the relation of terms that in respect of Quality are indistinguishable; whether (*a*) the successive moments of a continuous simple experience (a red light), or (*b*) experiences separate in time or place (two red lights); or (*c*) groups of the same qualities related in the same ways. 'Identity' is sometimes used in all these senses, but should (I think) be reserved for the persistence of concrete things.

(3) Similarity is compatible with some Difference, and seems to imply a less Difference than some other.

If any Quality is perceived to undergo a slow change, it presents at first a slight Difference, but still a Similarity, until at last a state is reached which presents a decided Difference. We have no appropriate names for the distinguishable places in such a series; it presents degrees of Similarity and Difference until we reach a

(4) Contrast, or a striking Difference upon a common ground of Similarity.

(5) Resemblance seems to mean a relation of concrete things, the same or similar in some qualities, differing in others, when our interest in the Likeness preponderates.

If this seems to be the road to pedantry, I shall probably atone for venturing upon it by not observing such distinctions myself; but fallacies arise from neglecting them; thought cannot be clear if language is indiscriminate.

Quality of sensation (say, heat) remaining the same, its Quantity may change, grow more or less intensive or extensive: this is Degree or Amount. Quantity of sensation remaining equal, its Quality may change (say, from blue to green). As to Time: Simultaneity, Interval, Duration, and Coexistent Positions in Space imply also relations of Quantity, that is, Equality, or More and Less.

The qualitative Likeness of Relations is called Analogy.

II. *Qualitative Relations*

§ 6. The Categories take their rise in human perception, from which they are partially released by language. In the experience of Reality things and their qualities coexist, or succeed one another and change, and are of this or that kind; that is to say, are alike or unlike (*a*) in Time, (*b*) in Quality. Hence follow two series of Concepts that have an astonishing prominence in the history of Philosophy. From the unanalysed experience of relative permanence and change issues the series: —

Changeable	Unchangeable
Becoming	Enduring
Potential	Actual
Possible	Impossible
Contingent	Necessary

From the experience that things are of various kinds, and kinds of kinds, in Nature issues the series: —

Thing	Nothing
Specimen	Species—Genus
Event	Law
Particular	Universal
Matter	Form
Phenomenon	Substance

Having thus arranged such words, simple inspection may convince us, that to treat them as of independent import is a delusion. We must briefly review them.

§ 7. As for Change, it has always been regarded as the enemy of knowledge and felicity. But so common a concept lies open to misconstruction from its indiscriminate usage. That something changes, and that there is a change in something, may easily be taken as equivalent expressions; but they are very different. That there is a change in something frequently implies that the 'something' still retains on the whole its identity: that something changes implies no such thing, but rather denies it. Hence 'that something changes' is the more appropriate expression for describing the experience (*κατὰ πάθος*) in which one quality disappears and is succeeded by another: whilst 'that there is a change in something' rather suggests a process in some concrete whole, one or more of whose qualities may change although, in some relevant way, it may still bear the same name; like Timon, who is still the son of Echecratides though he was happy once and now is grey. Neither of these meanings is self-contradictory.

However abstract the concept of Change, it is steeped in sentiment. If to any one who should complain that all things change, I were to reply, 'And a good job, too!'—he would count me a ruffian. Yet what is it that is good enough to last for ever? Perhaps if Space is limited, the Infinite can

only be expressed in Time. But in unhappy ages men see their native country decadent, as happened to Plato. The decline of our own powers begins at last for all of us, and in our memories pleasurable images fill most of the old rooms. Then there is the pernicious and fatal desire of rest and ease. Again, there is bereavement; there are premonitions of death; there are affections, and labours unfulfilled, and the instinct to persist in being, and egotism resenting to make room for others. Few are content with the permanence of the Universe, and understanding, and acquiescence, and the intellectual love of God.

Indeed, does not Change frustrate understanding along with our other hopes? It has been thought so; and the Unchangeable has been proclaimed the only true object of knowledge and the Reality of things—the Idea, the *nunc stans*: whilst the apparent succession of events has been said to warrant only opinion and even to be an illusion of our perceptive constitution, or the parallax of our own inconstancy. The Reality some one has compared to a row of pillars, which seem to us to move because we are condemned to be always passing by them. This hypothesis will presently recur; but if it were true, the progress of investigation ought to have led to a static instead of a more and more dynamic view of Nature, by which we seek in laws of change the explanation of what seems even the least changeable. And it has already been shown that Transcendent Reality is in Time, and that nothing else can be conceived to be manifested in Empirical Reality. Even the creation and sustentation of the world by divine Power must be considered as an activity implying change; and one may learn from the theology of Cudworth that it is not in this attribute that the Divine Being is unchangeable, but in Thought. Now Thought unchangeable may be manifest in unchangeable Laws; for it is not the object but the form of knowledge that is unchangeable *sub specie eternitatis*; it matters not whether in the thought of God or man.

Becoming is a less abstract concept than Change, for it more strongly implies *termini a quo* and *ad quem*, with the

suggestion that such termini are at least relatively enduring; although the Enduring can only be relative, since change is, in truth, all prevailing amongst the modes of Existence, and all beginnings and endings are selections of interest and distinctions of thought. At this height of abstraction birth and death are the same thing.

As the object of knowledge is changeable, but the form of knowledge is unchangeable; so Becoming is a character of experience and Reality, not of laws or concepts themselves. If we add to or substract from a concept it does not become another; we merely make a fresh one, the old remaining. Each concept is an identity; and this is the logical meaning of the Principle of Identity. Still a concept, though unchangeable, cannot be called enduring; for Time is irrelevant: it is therefore eternal.

When we consider any process of Becoming, C to D, C is called the Potentiality of D, and D the Actuality of C: not that either has a greater reality than the other; for all things that exist are actual; and C is admitted to be the Actuality of a foregoing B, and so on. The distinction, therefore is essentially relative; and the relativity is imperfect. Not to abuse it, we must observe that B (say the seed of a tree, or a cloud about to fall in rain) is not by itself the Potentiality of C, but only under favourable conditions.

The truth is that the interest has gone out of these old Categories of Heracleitus and Aristotle: they are vague anticipations of Causation and of the processes known to natural science. Motion, conversion of energy, chemistry, organic metabolism; it is these things that give definite meaning to Change, Becoming, Potential and Actual; and for a logician to discuss under vague and antiquated terms the truth of Nature in general, without knowing anything in particular, is too comic an enterprise to be carried on much longer.

§ 8. Much the same may be said of the Possible and Impossible, Contingent and Necessary. In fact logicians have given up the attempt to treat by their own old methods the Modality of Judgments, and have substituted outlines of the

Theory of Probabilities. Logically, Possible is anything that is conceivable, and any combination of attributes is conceivable that is not self-contradictory. But this only means that it is possible to think of it, not that any corresponding individual is possible in reality or even in imagination. Each attribute of a concept is derived from perception, and therefore must comply with the forms of perceptual consciousness, that is, it must be capable of entering into relations of Likeness, Difference, Succession and Coexistence with the rest of experience; but it does not follow that the combination of attributes in a concept occurs or can occur in Nature: for example, centaur, ghost, planetary influence, phlogiston. Every new concept or hypothesis is a regrouping of elements of knowledge that have severally a perceptual ground: its truth depends upon whether the concept corresponds as a whole with real, if hitherto unrecognised, groupings in Empirical Reality.

Referred to Empirical Reality, the Possible is that which agrees with the laws of Nature, and of which the causes and conditions exist or are to exist; but, in this sense, whatever is possible is also Necessary.

The Impossible is, logically, the self-contradictory; and this is the meaning of the Principle of Contradiction: physically, it is whatever does not agree with the laws of Nature, or of which the causes and conditions have no existence. Obviously, the Impossible-to-be is the same as the Necessary-not-to-be.

Except in the formal interpretation of Conditional Propositions, Contingency has no specially logical significance. Physically considered, whatever is possible but not yet extant, is contingent upon the occurrence of its causes. But unless its causes exist at some time it cannot be contingent; whilst whenever they do exist it is necessary. The character of Necessity has been discussed in Chap. IV. § 4.

Thus the Categories of Possibility, Impossibility, Contingency, Necessity, have only subjective value: things seem Possible or Contingent when we do not know enough about them to see that they are Impossible or Necessary. And,

further, the Changeable, the Becoming, the Potential and the Actual, are all Necessary as to their existence, and as to the time, place and manner of existence they are Unchangeable.

From this position, the notion of a *nunc stans* looks not unattractive, for the concrete system of the World in which every part is necessary becomes here more prominent than the abstract Time in which everything is contingent. We must remember that Time is the form of Consciousness, and that Consciousness is the only known Reality. Still, objective existence is not merely present existence, the tense of predication: to forget this makes people afraid to die; afraid, that is, of losing hold of the pyschological Now. But, as Spinoza says, there is necessarily in God an idea of each human body under the form of Eternity. Whatever belongs to past or future has existence or Reality, neither more nor less than the present. None but the most immediate Solipsist can dispute this. Whoever admits that there is any present existence beyond perception, must on the same grounds admit that past and future exist or are real, namely, by universal integration and continuity.

§ 9. The usefulness of the word Thing depends upon its vagueness: to define would only spoil it. Still, we may say that the notion of a Thing implies that it can be recognised, and that it is somehow different from all others. Any given Thing is said to exist, and the predication of this fact is called an Existential Proposition or Judgment, as if it involved nothing further. But everything exists in some determinate part of Space and Time, which is conditioned by, and exclusive of, every other part.

On the removal of any given Thing something else holds its place: this experience is the ground of the Principle of Excluded Middle. We cannot say in general what that something will be; but there is no such experience as nonentity, the common uncritical acceptation of 'Nothing': it is a self-contradictory concept, a supposititious offspring of the negative particle. There is always something or other ($\mu\grave{\eta}$ $\check{o}\nu = \check{\epsilon}\tau\epsilon\rho o\nu$). This reflection, far from being frivolous, is

so important that it accompanies every exact investigation. When in the ordinary careless life one says 'on opening the cupboard there was nothing there' (that is, nothing of the kind required), such an expression represents a double experience: (1) in the absence of the thing required, something else is perceived—this is a Difference; (2) there is a failure of expected Likeness: the seeker had a mental phantasm of the thing wanted (or, at least, a symbol of it and a preparedness to recognise it), and the perceptual satisfaction of this expectation is denied him. The latter experience, as the more interesting, absorbs the whole attention, and is generalised in the term Nothing, or non-satisfaction of any expectation whatever; but of expectations based upon definite experience there is no such universal failure.

The philosophers have taken up the problem of Nothing, and it suits some of them perfectly; but the best essay upon it is Henry Fielding's. Kant distinguishes four kinds of Nothing, according to Quantity, Quality, Relation and Modality (*K. d. r. V.*—end of *Transcendental Analytic*):

(1) There may be a conception of an object that cannot be found in experience, such as noumena, or a supposed new force in Nature.

But here we have a confusion of ideas, for though the conception of noumena, as such, involves no contradiction, the conception of them as given in experience does: in experience, therefore, they are logically impossible, and not on the same foot as a supposed new force that involves no contradiction, although it may be physically impossible. Such a supposed but indiscoverable force is a case of disappointed expectation, and one always finds something else.

(2) The conception of the absence of an object, such as cold, or shadow.

But these examples are definite experiences, by no means Nothing; and, apart from examples, the conception of an object that is absent is a disappointed expectation.

(3) The form of intuition without content—pure space, or pure time.

But there are no such forms of intuition apart from

experience. The perception of space or time involves a kinæsthesis, and so does the representation of them.

(4) The object of a self-contradictory concept, such as a figure bounded by two straight lines.

But the "object of a self-contradictory concept" is itself a self-contradictory concept: where there is self-contradiction no concept has been formed: and self-contradiction can only be called Nothing in so far as the frustrated endeavour to frame a concept resembles disappointed expectation in seeking an object.

There are not, then, four Nothings, but one Nothing; and that is generalised from one side only of our experience of the absence of things expected, namely, from the merely subjective side, to the neglect of the objective and real side of that experience, that something else is there. Hence the metaphysical conception of Nothing is the Indefinite Other. Now the Indefinite Other is always matter of experience, but the noumenon never is: therefore, the noumenon is not the Indefinite Other; that is, transcendent Reality, or Being, is not Nothing. If the noumenon has often disappointed the expectations of those who sought it, that was because they had not noticed that whatever is discoverable must be within consciousness, whilst the transcendent Real always lies beyond. Their expectation of finding such Reality was not based upon any foregoing experience of it; for, on the other hand, it is never Something. In short, we cannot do better than agree with the *Bhagavad-gita*, that Brahm is neither Sat nor Asat.

All concrete things compared together have resistance and extension in common. Add Space, and compare, and only the common attribute of extension remains. Add pleasure, or relations of Succession, and again compare, and there is no common quality or connotation, no one distinguishable mode of consciousness left, but only comparison itself; that is, relation of Difference. On account of the supposed emptiness of the abstract of All Things, it has been identified with the uncritical Nothing, or Nonentity, but, in fact it is Consciousness itself or absolute Reality. And it is not the Indefinite Other, but the discrimination of Otherness. Dividing

All Things, the *Summum Genus*, by dichotomy, with any assignable *fundamentum*, we have Something or Other. Nothing, therefore, is not on a foot with the *Summum Genus*, but is a counter-class, infinite term, or remainder, relative to a given Species, or Something.

It may be said, If Nothing is the Other, how can it be true that 'Nothing can come of Nothing'? For does not each thing come of another? I suppose, in the ancient maxim, the Nothing that is for ever barren, means Nonentity, a mere grammatical negation. But it is still true if we understand Nothing as the Indefinite Other, for no one thing has an indefinite antecedent. The material World does not arise from the Other in objective existence, namely, Space. Objective Existence, the Phenomenon, does not spring from the Other in experience, namely, the subjective processes now contrasted with it; and to experience as a whole there is no Other in experience. Concerning Nothing, then, and its true inwardness, may so much suffice.

§ 10. That Things are alike in some ways and unlike in others is the fact of Species in Nature, and the likeness and unlikeness of Species is the fact of Genera; that is to say, Species have no other existence in Nature than in the resemblances of Things. A Thing, considered as exhibiting the qualities of any specific resemblance, is called a Specimen. A statement of the specific resemblance is a Definition of the Name of any Species or of its connotation, and therefore a Limitation of its denotation, that is, of the things that can be considered Specimens. The thought of a Species, usually by its name and, more precisely, according to the Definition, is a Concept.

The Concept of a Species being unchangeable, it may seem a matter of course that it should be perdurably represented by specimens in Nature. A brief experience seems to confirm this assumption, and then there may easily arise the notion of Classificatory Sciences in which all things are to be arranged according to Genera and Species. Ancient Idealism, too, was beset by the prejudice that since the Concept or Science is unchangeable, it must have, either in or above Nature, an

unchangeable object. More comprehensive experience shows, however, that not only everything but every kind of thing has a determinate existence in time: and that, therefore, any given Species may cease to be represented by specimens in that present time during which men can think and have concepts. A Species, then, does not exist perdurably, and yet it has a permanent existence within certain limits of time, and this is the grain of truth to be found in the older doctrines.

But if a Species comes at a certain time into existence, and again comes to an end, to sum up its characteristics in a Definition is not an adequate Science of it; we must also know the conditions of its coming to birth and death, and therefore of its having such and such characteristics. Hence a scientific classification is only a preparation for Science.

The words genera and species are apt to suggest plants and animals, but we are here dealing with merely logical categories. Whenever anything is definable by its likeness to other things, there is a species. The coming or going of any such thing, or any modification of it, is an Event, and the statement of the conditions under which it comes or goes is a Law. As a specimen is to a Definition, so is an event to a Law, and Laws have no other existence in Nature than in the resemblances of events. Hence, again, though a Law, as conceived, is unchangeable or eternal, yet it may be represented by events in Nature only during some definite period of time. Therefore, Definitions and Laws do not determine the existence of anything, but only describe it: inasmuch as they remain in thought unchanged, whether any facts agreeing with them exist or not in present time.

As there are species and genera and still wider classes, according to the more or less resemblance of specimens, so Laws are of less or greater generality according to the greater or less resemblance of events. The greater the generality, the longer the period of time during which a Kind or Law is realised in Nature. The more complex Kinds have the less duration. Not only animals and plants, but all inorganic integrations, even the chemical atoms, may be supposed to have a beginning and a dissolution. The ancient belief in a

Great Year of the World, during which all things and all kinds of things, even the gods or (in modern prose) the Laws of Nature, are born and reabsorbed, has been renewed by the doctrine of Evolution. All things rush down into the maw of Siva; that is to say, they are resolved into Protyle. And if the existence and character of all bodies is conditional and transitory, so is the realisation of all Laws that are dependent upon the collocations presented by such bodies.

It is, therefore, rash to draw up a list of Categories of Absolute Reason as necessarily determining the nature of the Universe. There may be some temptation to put down (1) the conditions of Knowledge, Likeness, and Difference; (2) the relations of Time, Space, and Number, which are independent of any particular concrete existence; (3) Protyle and the Laws of whatever dynamic conditions prevail in Protyle. These last Categories have not yet been definitely embodied in our new mythology, though the process may have been begun by our Hesiod, Ernst Haeckel, in his *Riddle of the Universe* (cf. chaps. xii.-xiii.). If there should not be sufficient grounds for an inductive treatment of such things, the possibility would remain not only that the scheme of the World is never repeated, but even that such Laws as those of gravitation or of constant proportions are only realised in the present Great Year.

Generalising the correlatives, Specimen and Species, Event and Law, we find the contrast of Particular and Universal. A particular Thing or Event is this or that, exists here and now, or there and then: determinate time and place are its indicative characters. It is further constituted by qualities and relations to everything else, and these qualities and relations, so far as they are the ground of resemblances, are Universals. Such even is its time, for at the same time there are many things in different places, and such also is its place, for in the same place there are many things at different times; it is only by time and place together that a Particular is determined, since this character is different for each. But this character colours all its other qualities and relations, making them all grounds of difference as well as of resemblance:

for example, the whiteness of two shillings may be the same, but is not identical. We cannot conceive how it should be so, but we perceive it plainly enough: it belongs to the Empirical Reality of things.

Since the qualities and relations of every Particular are infinite, it cannot be logically defined; since its localisation is relative to points of measurement, which again are relative to others *ad infinitum* (such is our present knowledge or ignorance) it cannot be mathematically defined; and since every quality and relation of it carries a difference as well as a resemblance, it cannot be fully understood according to laws. Hence there can be no science of Particulars as such, but only so far as their essence can be expressed by the universality of their qualities and relations; for differences apart from resemblances do not constitute knowledge nor Nature.

Such reflections have sometimes led metaphysicians to disparage the Particular as unreal, because it has not the character of an Universal, which is definite and unchangeable: forgetting that neither has the Universal the characters of the Particular, which is original, infinite and inexpugnable. Other metaphysicians, remembering these things, are for disparaging Universals as mere abstractions; forgetting that human perception involves Universals, and that every valid Universal is an apprehension of experience. Every abstract principle is as truly a statement of matter-of-fact as the most detailed description of a battle or a beetle. Perhaps an education chiefly literary lays a man open to opposite errors: familiarity with abstractions may lead one to exaggerate their independent value; want of familiarity with the exact processes by which abstractions are elicited from experience may lead one, in a different mood, to treat them as empty formulæ, that possibly, or even probably, are at war with the facts.

§ 11. Any Particular may be considered (*a*) as of such a Kind, by a selection of certain resemblances which it bears to certain others; or (2) so far as it resembles things of many or all Kinds. In the former case, the Kind to which it is assigned is called its Form; in the latter case, that by which it belongs to no one class rather than to another, is called its

Matter. Taking Form and Matter as correlatives, what is Matter in relation to one thing (pig-iron to knife-blades) may be Form in relation to another (pig-iron to iron), as in the logical subalternation of genus and species. Taking Matter as opposed to Form and an utter privation of every character, we have the Indeterminate. Taking the doctrine of Form and Matter in connection with some vague notion of the development of Nature, we may identify the Indeterminate with Protyle, out of which all Forms ultimately emerge; but in the more definite modern hypothesis of development Protyle is not exactly the Indeterminate, however hard to determine.

Every Form is an universal, and Matter is also an universal, whether something less determinate in relation to a given Form, or in relation to all Forms quite indeterminate. Matter is regarded as distributed in space, as divisible and as "informed" in multitudinous ways to constitute Particulars. But the Indeterminate cannot be distributed, nor divided, nor informed, and no combination of universals, Form and Matter, can produce a Particular; for, as we have seen, the Particular cannot be generated by conception, it belongs to Empirical Reality and can only be perceived. Form and Matter are ways of considering Particulars, they are abstractions not elements.

Materialism considers the Forms of Nature as changing, the Matter as persistent, because Materialism, like Empiricism, starts from perception, in which alone the change of Forms is manifest. It resorts to the notion of Matter as the common ground of Forms, but goes astray from the path of experience by forgetting that Matter is not something independent of perception. Matter, in fact, is a methodological Category: it is for the physical sciences to decide how it may best be defined, as a means of understanding phenomena.

Idealism considers the Forms as eternal, and Matter as something relatively unreal, incessantly changing as it passes through the Forms; because Idealism starts from thought and the forms of thought are universal and unchanging. But since Forms are manifestly transient in experience, they have to be regarded as, in their true nature, transcendent Realities;

either *per se*, which is Absolute Idealism (Plato in the *Republic*); or in the Divine Mind, which is transcendent Subjective Idealism (Cudworth). But neither of these doctrines casts the faintest light upon the problems of human knowledge and empirical existence. For, however such Ideas exist, we cannot directly know them, having no power of transcendent intuition but only powers of analysis and induction, according to the measure of our feeble race. If they stood before us we could only know them by comparison; in our tables of instances they must be entered with the rest; for the weakness of knowledge, whatever it is, lies in us not in the facts; and, therefore, an Idea of truth unrealised would still appear to mock us. And as to Existence, Ideas cannot be the causes of phenomena, because they lie out of the order of causation, and their unchangeableness is repugnant to causation. Even the creative activity assumed by transcendent Subjectivism, belongs not to the Ideas but to the divine Power; and if we carry the category of causation into the noumenal world even the divine Will becomes subject to it. Of course, Ideas of Laws have no more energy than Ideas of Species. And they can no more be the essence than the causes of phenomena, for how can the essence of things exist in separation from them? Or if the doctrine be adopted that Forms are not transcendent (a mere reduplication of existence) but immanent in phenomena, each universal identical in all its manifestations, there is the difficulty that in different times and places there cannot exist an Universal numerically one, but only the same according to the definition such as analysis may give; and to dispute this is to deny the reality of Time and Space, and then the Forms become again transcendent. But we have seen that experience is real. Finally, since Forms cannot explain the failures and shortcomings of Nature, or the accidents of things, these are attributed either to Matter, and then that shapeless shadow is endowed with quality and energy; or else to Necessity or to Ahriman, and this leads to Fatalism, Manicheism, and Devil-worship.

Nevertheless, one Idea is indispensable to speculative philosophy, namely, transcendent Substance or Being. And it

has, I am sorry to say, all the characteristics of a genuine Idea: we cannot adequately know it, it is never found in experience, and is of no definite use in explaining either knowledge or existence; neither practical life nor special science feels the need of it. Even in the philosopher's vision it is a blind spot only discovered when he searches for it, yet it is irresistibly suggested by all lines of metaphysical reflection.

Most of these objections to Idealism were urged by Plato himself in the *Parmenides*, at the height of his impassioned curiosity, before relapsing into his later dogmatism. But how is it possible to wish him to have abandoned it, or to have thought otherwise than he did, if we have any sense of sublimity in the retrospect of Philosophy, or of necessity in the development of thought? His conception of Reality as static could only be overcome by calling in a personal agency. The nature of concepts and his admiration for Arithmetic and Geometry were opposed to any coherent theory of change; for Number and Space seem the most everlasting of all things conceivable, and may well be undisturbed by the systole and diastole of the Great Year. Aristotle's notions of the process of phenomena were embarrassed by his doctrine of Causes. The Stoics and Epicureans had better views of Causation, and some specialists, like Hipparchus and Archimedes, made memorable investigations; but the vitality of classic civilisation declined before inductive method became fruitful. The modern sciences resumed the conceptions of the Stoics and Epicureans with two great advantages: improved powers of mathematical analysis, and greater energy of the inductive disposition. The activity of this disposition in antiquity unfortunately coincided with the decline of Greek national life, in modern times most fortunately with the early maturing of the European nations; for there is a sympathy between the achievements of men, and their enterprises wax and wane together.

Every Particular Thing is a Phenomenon and, as such, by correlativity implies Substance. Consciousness is also usually held to need a Substance; but if, as we say, consciousness is

immediate Reality, to consider it as dependent on Substance is contradictory. Substance, then, is an objective category correlative with Phenomenon. But we have seen that, on analysing the Phenomenon, nothing can be found but a group of qualities, themselves phenomena, cohering in one place, perdurable and moving as a totality. In view of this fact there are three ways of treating the category of Substance: (1) to reject it as illusory. But whoever does this should be careful how he speaks of phenomena, for his words may seem coherent by force of the implied concept of Substance, although his repudiation of that concept has rendered his argument logically empty. (2) To recognise Substance as a transcendent category, inadequate, one-sided and orectic, signifying or indicating that Reality which is not immediately expressed in consciousness, but mediately by phenomena. In this use the term Substance might well, perhaps, be replaced by Being. (3) To regard Substance as a category necessary to the understanding of phenomena, whether it be (as Kant says) *a priori*, or the result of reflection upon experience, but merely methodological. It is then hardly distinguishable from Matter; it is the formal way of considering Matter, and its precise definition must be left to the physical sciences; though we may be confident that the Primary Qualities will be the core of the definition, because these constitute the measurable aspect of Nature and the ground of the conceptual system.

III. *Quantitative Relations*

§ 12. As to Relations of Quantity, or Ratios, exact likeness is Equality; difference is Greater or Less, according to the order of terms in the act of comparison. A ratio of ratios is called Proportion. Inasmuch as, in certain cases, exact likeness of Quantity is unattainable, things may be called equal when there is less than any assignable difference between them, or when one may be substituted for the other without affecting the result.

The judgment of Equality has, for scientific purposes, the following advantages: (1) It is more definite than qualitative

Likeness, because of the two-fold contrariety—neither Greater nor Less; whereas Likeness of quality has only the contradictory, Unlikeness. To give "neither Greater nor Less" as a definition of Equality would be, in strict logic, a tautology of relative terms: but though this is formally true, it is not true for intuition, which is kept straight (as it were) by warnings on either hand. Hence Likeness admits of degrees, but Equality does not. Simultaneity, it is true, has also the double contrariety of Before and After; but whenever there is a question not merely of instantaneous judgment but of methodical determination, Simultaneity must be deduced from measurements. The clear appreciation of Before, Simultaneous, After, introduces the conception of a Series or order in Time, the positions in which are relative to a given point from which they are measured, and from which their distances are Less, Equal or Greater. Finally, the judgments Greater or Less when made definite (how much) require a common measure and, therefore, judgments of Equality.

(2) The relation of Equality is simply convertible without change of expression or risk of error: if $A = B$, $B = A$. This is also true of Likeness: if A is like B, B is like A. But with '$A > B \therefore B < A$,' the expression changes; and with 'A is simultaneous with B, therefore B is simultaneous with A,' though the expression is the same, there is risk of error unless we know that both events are either instantaneous or altogether isochronous; and this requires another judgment of Equality.

(3) The Relation of Equality may be repeated in judgment any number of times without loss or change of significance. Hence it is the chief means of mediate comparison, and gives such immense range to the Mathematics. Qualitative Likeness, being vaguer and admitting degrees, cannot be so transferred without loss of confidence.

(4) The Relation of Equality admits of the most precise application to things and events by the arts of measurement: whereby the use of Mathematics in the Physical Sciences becomes possible.

For these reasons, and because (as we have seen) Likeness is the ground of Explanation, Equality, as the most exact

Likeness, is the supreme category of Understanding. Therefore, we seek to reduce Causation to equations, and to find the explanation of Nature in those Primary Qualities that are measurable and to which Causation is referred.

In subjective experience the modes of Quantity are Degree, Duration and Amount (volume or extensity). But in the same objective circumstances different Subjects appreciate differently these modes of experience; and there is no direct means of comparing their judgments; nor even those of the same Subject at different times with any certainty or exactness. We therefore agree to recognise some grounds of comparison as if they were the same for all Subjects, and for each Subject at all times; and we naturally adopt as such grounds the forms of experience whose development precedes the consciousness of subjectivity, namely, the space-relations of bodies and the movements of bodies in space. Although the agreement of subjective estimates with objective measures is relative and approximate in each case, yet the accumulation of experience in which differences are neutralised, has produced the disposition to accept such physical standards as thermometers and balances. For example, that weights are equal when, being equidistant from a common fulcrum, they hang evenly, is a theorem accepted by every one as soon as proposed, because our own bodies, being approximately symmetrical, are pairs of scales. Standards and apparatus having been fixed upon and elaborated, we are able to follow and estimate the forces of Nature far beyond the lower and higher limits at which they can excite recognisable sensations or sensation-differences in ourselves; and our instinctive confidence in such methods is confirmed by the agreement of the results of calculation and verification.

§ 13. Space-relations between bodies are Distances and Directions measured by Lines and Angles. Lines and Angles are given in perception; but not mathematical lines, nor therefore true angles formed by the meeting of lines that do not coincide. Sigwart, indeed, says that the straight line is the line of sight in depth, the line in which we originally projected objects from ourselves (*Logic*, § 67). But even in Berkeley's time it was admitted that the line of sight in

depth, being end-wise to the eye, cannot be seen at all; and, if it were seen, it need not be straight, since that depends upon the medium. Or if the true line of sight is not exactly end-wise to the eye, because it starts from between the eyes, no other line is more difficult to see than this one. As for the original projection of objects, it happened a long time ago, some millions of years before the birth of Man; which I can hardly remember. An adequate experiential basis of abstract science is, however, found in the lines approximately straight that are seen in other directions by retinal sensation interpreted by movement. Whether space-relations can be known by retinal stimulus alone is disputed; but, surely, no peripherally initiated sensation without muscular reaction exists; and if it did exist, it would be isolated and could give no aid to judgment. The movements of the eye and hand yield a perception of straightness; and of the whole body, not in the line of sight, but in the line from our feet to an object. It is not ease of movement or economy of effort that determines the matter; for, from the structure of our organs, many motions in a curve cost least effort: it is the importance of straight movements to the activities of life, as in chasing and striking, that has produced an instinctive judgment of straightness, and a quick sense of all deviations from apparent straightness, as in dodging round a tree. And, surely, it is far from true that, in Nature, lines straight enough to give rise to a generic idea of straightness, are rare. Innumerable pines and palms present them, every stalk of grass or bamboo from knot to knot, the sea and sky-line; and the edges of split rock must have been familiar to the troglodyte. Moreover, ages ago men learned to make things straight—spears and arrows—of necessity, because they fly best.

Approximately straight lines being perceived, the formation of the concept by abstraction is simple: to doubt this is greatly to underrate the power of abstraction. Similarly, curves and angles are known by the sweep of the arm and by pointing here and there; besides what may be witnessed in the flight of birds and missiles, in the stoop of trees, the set of boughs to their trunk, of leaves to their stalk. The right

angle is that at which most trees, and men themselves, stand to the ground: it has the emphasis of equilibrium. It may be suspected that points were originally fangs and thorns. Generic ideas of all these things were formed by unsophisticated man, and named, and used in dealing with his world. To Science remained the exact definition of the concepts; the discovery of methods for measuring angles by the division of the circle, and for determining position by relation to points assumed; and processes of ratiocination by which properties of figures not directly apprehensible are disclosed and demonstrated.

Kant's error has already been referred to (Chap. IX. § 3), namely, that Geometry is a science of the immediate intuition of Space; which leads him to contend that Space is pure form of perception and not a concept. Space is certainly a percept, but we never perceive pure space: our perception of space is full of details, which differ from moment to moment; so that for us, intent upon what is essential, the differences cancelling, a concept also forms itself; and without this there could be no science. Geometry was at first a collection of devices for measuring bodies and the relations between bodies; but in acquiring its scientific character it began to deal not with particular space-relations but with the concepts of them. Now such concepts are eternal and unchangeable, and therefore all that is demonstrated concerning them is universal and necessary. Geometry, then, is Abstract Science in the sense that it is abstracted from the facts; and, therefore, it is true of the facts and verifiable, so far as percepts approximate to their concepts.

Abstract Geometry, as the truth of experience, presupposes the Uniformity of Space: its concepts, abstracted from a narrow and coarse perceptual knowledge of the World, are assumed to hold good of the remotest regions and of the most minute and obscure recesses: their verifiability, then, can hardly ever be placed beyond cavil; though the incessant accumulation of wide and complex deductions, involving geometrical principles, gradually overcomes the doubts of all, except a few ingenious and suspicious minds. On the one

hand, it may be said that Geometry is to be trusted as the truth of experience, unless facts are found in contradiction with it: meaning by facts such experiences as are accepted by trained investigators, not silly ghost-stories such as, in the modern recrudescence of superstition, we sometimes hear alleged as only explicable on the hypothesis of a "fourth dimension." At present no irreconcilable facts are known. But, on the other hand, it may be urged that Geometry can never be regarded as true and adequate as long as any region of Empirical Reality remains unexplored; and, remembering that Space is a phenomenon constructed in experience, this distrust of our conceptual Space must mean, that there may be some conditions of Being of which Space is the phenomenon, which are not represented in our perceptual construction, but might in certain regions or conditions disturb our experience. The Uniformity of Space implies that a straight line does not alter its length or lose its straightness, to whatever part of the universe it may be transferred; that, supposing it presented in some physically unchangeable body, it could be used as a measure of all spaces. If any one disputes this, there is no reply. Sigwart says he cannot conceive that, if objects shrank when moved, we should not discover it by our memory-images (upon which he thinks comparison depends); that is, it is more conceivable that bodies in common Space should change in magnitude than that the shallow traces of our personal experience should vary! He does not seem to be jesting; but this sort of argument comes of yielding to the prevalent whim that any bare suggestion of nonsense imposes an obligation to refute it.

The simplest perception of Time comprises a Duration in which Future, Present and Past are all present: although this seems a paradox, because we are in the habit of substituting the conceptual instantaneous Present for our present experience. The contents of such experience incessantly change; and, abstracting from the variable contents, we conceive of a Duration that may be represented by a straight line; though nothing can be less like a line than our actual experience of Time. Then, to this line all the determinations of one

dimension of Space become applicable. Any point within it being taken, the opposite directions from this point represent Future and Past, which may be measured by any unit; and then durations may be compared. Equidistant events in the same direction are conceived as simultaneous; if not equidistant, the interval of their succession may be computed, and so on.

To these abstractions, there correspond in experience the perception and imagination of an indefinite duration of the World-process, with its past, present and future diversified, though uninterrupted, by countless events of all degrees of interest, and more exactly marked by rhythms subjective and objective. These rhythms are periodic movements, which may be traced or conjectured throughout Nature, from vast revolutions of remote celestial bodies to the undulations of ether that are conceived as necessary to explain our perceptions of the physical forces. From amongst such rhythms one must be selected as the standard of duration; whether the rotation or the revolution of the Earth be taken, or some physical standard from the region of molecular or etherial vibrations shall be deemed more constant. The verification of the standard (that is, the determining of its constancy) depends on a comparison of observations or experiments with computations. Observation and experiment involve reliance on subjective testimony, and, as this is variable, problems arise in the elimination of error. The best method for the elimination of error is that which gives the most consistent results; that is to say, we refer again to objective measurements, and regard the greatest agreement amongst these as the test of our standard of Time, when freed as much as possible from the influence of subjective rhythms and the idiosyncracies of self-consciousness. We take for granted an uniformity of the objective world into which we were born and which had laid down the conditions of our conscious lives before we were conscious of ourselves. So from the first it cannot be supposed that the adoption of a standard (say, the day or month) was made upon a subjective estimate of Time elapsing, —a series of ideas, equal sums of which the standard was felt

to comprise and, therefore, to measure: it must have been instinctive.

Time, then, is measured by the Motion of a Body, that is assumed and computed to occupy a constant duration in traversing a certain Space; and some unit of Time being taken, whether the standard or some multiple or division of it, all other Motions are measurable by that unit. Thus velocity is determined by the Space traversed in an unit of Time. Berkeley tried to prove the impossibility of framing an abstract idea of Motion without a moving Body; and using 'idea,' as he did, to mean 'image,' it is impossible; for no such thing can be perceived, nor therefore imagined. But there is no difficulty in conceiving it; for abstracting from all differences (qualitative and quantitative) of moving bodies, there remains a point moving in a line. And this concept is convenient in computing the motions of masses by their centres of gravity, and of atoms: being nearer to a representation of the truth of atoms than any concrete image can be.

§ 14. Measurement of Continuous Quantities, such as Space, Time, Motion, supposes the recognition of a Unit, and of laws of the addition, subtraction, etc., of units; that is, of Number. But it cannot be imagined that the laws of Number were originally discovered by the analysis of Continuous Quantity. Pure intuition comprises no data for any sort of science, and Time and Space, being continuous even in perception, though diversified in their contents, and being purified in conception from all diversity, do not, as such modes of Quantity, offer the data for perceiving Plurality and learning to count it. And in fact the history of this great acquisition of culture is pretty well known. The Plurality of mere diversity is given in every act of perception. The Indefinite Plurality of things of a kind is also given, and is recognisable by the higher animals. Deer in a herd, eggs in the nest, children in the family, warriors in the tribe, articles of barter, are felt as 'more or less' before they are known as 'so many'; and to analyse the Plurality of things of a kind is the problem of learning that art of counting of which all arithmetical processes are only abbreviations. The instinctive solution of the

problem seems to have consisted in the taking of one standard group, the best known,—that is, the fingers of the hand, each of which generally has its distinctive name, and then comparing all other groups of things with this standard as a common measure of plurality. To compare five warriors, with the thumb, forefinger, middle finger, stiff finger, and little finger is the primitive equation. If there are more to be reckoned, the other hand, or even the toes may be appealed to. This detailed comparison unit by unit is often used in primitive barter (say, one stick of tobacco for one glass bead); the children and even the adults of modern Europe may still be seen counting on their fingers; and our semi-civilised world has settled down by force of habit to the decimal system in spite of its imperfections.

Still, comparison in detail with a standard group is not true counting; it is only a perceptual equation. True counting requires: (*a*) abstraction, from all the differences of individuals, except their distinctness as objects in a series; (*b*) the recognition that all arrangements of the series are indifferent; (*c*) the consequent freeing of the names of numbers from all connection with particular objects or arrangements. Numbers can then be analysed and defined and their relations compared as abstract science; and they can be applied conventionally or arbitrarily to any objects, groups of objects or ideas, qualities or relations, or to hypothetical divisions of continuous quantities—Space, Time, Motion; always subject to the condition that the predications made or conclusions drawn in terms of number do not assert or imply anything as to the qualitative character of the things counted, nor anything as to their quantitative character except the numerical. Whether the things counted are qualitatively alike, or whether the continuous quantity has been evenly divided (say, into inches), is a distinct consideration: the likeness or equality of things counted implies not merely a numerical unit but a Unit-measure.

In counting we attend to the things counted; and the abstract character of Numbers has led to the hypothesis that it is the common facts of all counting—acts of Attention—that

are the basis of Number. But to attend to acts of Attention is the most difficult exercise of introspection, and nobody dreamt of it when Arithmetic was formulated.

Nevertheless, in counting it is always assumed that the things counted belong to some group, or come under some general denomination or *suppositio*, though they may differ widely in both quality and quantity: a traveller may count the 'items' of his luggage, or the contents of any parcel; a farmer may count a flock of sheep, or the number of pounds that one sheep weighs; a chemist may count the elements, or the qualities it is convenient to recognise in defining a given element. Thus the *suppositio* may be indicated by the nature of the case, or by general convention, or may be quite arbitrary. However determined, the *suppositio* is a Totality or Whole, of which the items counted are numerical parts; and any Total may be treated as a Unit under a less comprehensive *suppositio*. Thus all the things we usually deal with as concrete units are chemical and physical Totals.

Nothing can be more obvious than these considerations, yet on the neglect of them depend most of the puerile fancies that have been entertained concerning the One and the Many: fancies excusable enough in the beginnings of speculation, but which we see persisting age after age in the writings of men who invoke the name of Plato,

> And wonder with a foolish face of praise.

That there should be one Idea or concept and many particulars, is due to this, that when a man counts ideas he does not count particulars, and that when he counts particulars he does not count ideas: the *suppositio* is different. We might as well express amazement that one strap should bind up many sticks. That particulars should agree in some qualities (determining the concept) and differ in others (locality, for example), has nothing to do with Arithmetic, but is a physical result: conditions of production being more or less similar, so are the products; but as the conditions are not exactly the same, neither are the products.

That one Substance should have many Qualities can raise

no surprise in any one who considers, that empirical Substances are metaphysical totalities and are counted under a different *suppositio* from their qualities, which are metaphysical parts. As for Substance transcendent, my advice is—not to try to apply the ready reckoner in that region; but, at least, there is no contradiction in Spinoza's conception of one Substance with infinite Attributes. We must, however, distinguish this arithmetical consideration from the pseudo-physical question how the One, if a prius, can become a Many. This involves one of two fallacies: (1) either the notion of Becoming or Generation, thus used for procession from the Absolute, is a mere ghost of physical causation, meaningless and inapprehensible—a "transcendent use of the category"; or (2) it is assumed that the One must be simple, confounding the *suppositio*; for the One may be a metaphysical totality of Attributes, or a physical totality of (say) Atoms, or a numerical totality of anything. Unity has nothing to do with simplicity; the unity of Apperception, for example, is in the highest degree complex. But, again, the procession of the Many from the One, or self-diremption of the Absolute, cannot be shown to be logically necessary on the ground that One implies Many as correlative; for the One, as Idea, is not correlative with the Many as Phenomena. And hence too, the vulgar objection to the doctrine of the Trinity, that there cannot be One Substance and three Persons, is absurd and laughable. Not that I can approve of the pseudo-Athanasius's use of the number "three"; it is a transcendent application of Arithmetic.

But this reminds us that the word 'One' is often used negatively, or mystically; for when we say that God is One, we are not about to count gods; we merely repudiate Polytheism. The One of Plotinus was not a digit. Where there can be no second, 'One,' numerically used, is a meaningless predicate. That the Universe is one, is tautology; that the Absolute is one, is verbiage. But should we call them 'One,' it would not follow that God, or the Universe, or the Absolute is simple; and they are very rash who maintain that whatever consists of parts must perish: a shallow, empirical prejudice!

Our own investigations indicate that, beginning with the actual World in Self-consciousness, this implies Universal Consciousness and Being; but whether these shall be reckoned One, or Two, or Three or Four, let them decide who think more highly of Arithmetic than I do.

§ 15. The indirect measurement of Quantity (as Comte defined the Mathematics) depends upon the Axioms of Mediate Relation, which are reducible to two: (1) magnitudes equal to the same third are equal; and (2) if equal magnitudes be added to equals, the sums are equal. Equality implies that the magnitudes compared shall be of the same order (Degree, or Duration, or Extension), since else they cannot be compared.

There is a resemblance between the mathematical Axioms and the *Dictum de omni et nullo*, but much disparity in the fruitfulness of these forms. For if logical comparison deals with Classes, these are definitely related only within the rings of Porphyry's tree, and elsewhere overlap one another with endless irregularity; and if with Causes, indefinitely conceived as subject to plurality or vicariousness, no causal series can be formally reversed. But in Porphyry's tree, though we ascend it securely enough, the progress is always brief, and we cannot descend again except by limitation at every stage; and as soon as we leave its shelter and attempt to explore the neighbouring wood, on the strength of the likeness of Class A to B, B to C, C to D, from A to D becomes a perilous leap, because the likeness may differ in each relation. Or, again, if in general A is a cause of B, B of C, C of D, it cannot be inferred that in any particular case D is the effect of A, because at each step backwards there may have been other causes. On the other hand, comparisons of Equality admit of endless concatenation, reversal and substitution. Hence the advantage of treating causal series as presenting equations in the transformation of matter and energy.

The power of the Equation sometimes tempts metaphysicians to imagine that they are wielding it when, in fact, they have no more than the relation of Genus and Species at command. Thus Schopenhauer establishes to his own satisfaction the following series: The Will to live is an effort at

individualisation; individuality is limitation; limitation is exclusion; exclusion is opposition; opposition is strife; strife is pain; pain is evil, therefore the Will to live is (morally) evil. But only *some* opposition is strife, some strife pain, some pain (moral) evil; and even earlier in the series, though limitation, exclusion, opposition may be abstractly correlative, moral associations creep subtly in. Similarly deceptive series are not uncommon in dialectic. Whilst ostensibly employing abstract comparison, the meaning of terms is at every step enriched, and it is not acknowledged, as it should be, that the source of enrichment is experiential. No richer category was ever derived from a poorer one: experience is the common ground of them all.

In perception an equation may be determined more exactly than any other comparison; but as direct comparison is limited by our powers of perception, so is the direct verification of the Axioms. The Axioms are, in the first place, instinctive judgments, assumed and acted upon by men long before they are formulated: not only in man but throughout the animal kingdom, each creature's body is necessarily a measure to it of all other things. That the comparisons of active experience should be exact is not essential to the practical use of the Axioms. It is enough that the nearer other things are to being equal in length to a foot or a cubit, the more nearly they are equal to one another: the shortcomings cancel, and the universal instinctive assumption emerges. That if A is greater than B, and B than C, much more is A greater than C, is a still commoner experience, but less interesting, as its generalisation is now less fruitful. It is necessary, however, to the further formation of progressive quantitative series; and, therefore, cannot be derived from such series.

When under definite ideas of method the Axioms are formulated, the relation of Equality is conceptualised, and it is thereby required that every comparison shall be not merely in perception but unconditionally exact; and in this sense the Axioms can never be directly verified. But their truth is known not merely by intuition but by the consensus of all

deductions from them, and they are applicable to particular experience in proportion as the relations determined in experience approximate to conceptual equality.

Quantitative reasoning then consists in the mediate comparison of Times, Spaces, Motions, Series, Groups, as conceived and defined. When such quantities are measured in terms of some unit they are expressed by Numbers. Number is usually opposed, as discrete—to Time, Space and Motion, as continuous. But how Number itself should be discrete I cannot understand; the predicate is only applicable to things counted. In counting items in a group (say, sheep in a flock) the things numbered are discrete; in counting inches in a rule, the things numbered are only discriminated. So far from being opposed to a continuum, Number is essential to the conception of it. A continuum is conceived as that which can never be exhausted by division; but this implies the conception of a division infinitely continuable. That in fact the process stops, has nothing to do with the conception of it. Wherever it stops the result will be expressed by a finite number; but to say that if one divides for ever, an infinite number will never be reached, is a rather bad bull.

The definitions of numbers are obtained by addition of units up to 10 (that is, by counting), then by adding 10 to 10 or part of 10; and arithmetical processes consist in establishing equations between different ways of constituting a Number according to the Definitions. The analytic process founded upon the definitions has sometimes been mistaken, as (apparently) by Hume (who may have followed Leibniz, *Monadologie*, §§ 33-35), for the whole method of Mathematics; and, if there were nothing more, these sciences would consist wholly of verbal or identical propositions. But, as Kant saw, there is a synthesis, though he was not happy in the examples he gave of it. In fact there are two synthetic processes in Arithmetic: (1) the counting, upon which definitions of the numbers are based; and (2) the intuition of Axioms that justify the concatenation of equations. Similarly, geometrical reasoning consists in establishing equations between different ways of constituting the same facts of distance and direction,

according to the Definitions and in reliance on the Axioms. As for the geometrical figure, given or constructed in perception or imagination, it is necessary to the analysis and helps to confirm our sense of the conclusion; but the demonstration is conceptual and, therefore, universal and necessary. Algebraic reasoning carries out the comparison of quantities by substituting symbols for the quantities themselves or their relations; and abbreviates the process of ratiocination by substituting signs of operations to be performed for the detailed performance of them.

Negative quantities, expressed by the minus sign, may be interpreted in the same way as Logical Negation. We saw in § 9 that Nothing always means some Other; and so does negative quantity in Mathematics; but whilst in Logic the Other is quite indefinite, here it is always the Other of a given quantity. Thus in measuring distance (say, a mile) we start from some point in some one direction; and the negative of this, or minus quantity, is an equal distance measured from the same point in the opposite direction. Similarly with degrees: representing them upon a scale, any point in the scale may be taken at convenience as zero; and all degrees above it being called positive, all below it are negative; and if y stand for any positive degree, the corresponding negative is $-y$. Zero, of course, is not nothing, but a certain point in a scale. Absolute zero of temperature is another state of matter than that in which the molecular motion of physical temperature exists.

It is a standing paradox that in manipulating algebraic symbols, the multiplication of minus quantities into one another should give a positive result: minus a multiplied by minus b is ab. But the apparent difficulty depends upon our regarding the two minus expressions as independent of one another: in fact, they are like clauses in a sentence, one of which qualifies the other. That a degrees below zero taken negatively (the reverse of below) b times, should be ab above zero, is a truth corresponding with Obversion in Logic and with the rules of English Grammar.

As for "irrational expressions" such as $\sqrt{-a}$, they are

methodological devices whose justification is far from being agreed upon amongst experts; so that it is useless for a layman to discuss them. Taken as they occur in a process of calculation, they seem to me to stand for operations to be performed subject to the context. Puzzles arise from assuming that every expression must be good in any context; but mathematical symbols depend for their meaning upon what is being reasoned about. De Morgan's explanation of $\sqrt{-1}$ (*Elements of Trigonometry*, chap. iv.) is the most intelligible I have ever seen.

There is more promise of metaphysical interest in incommensurable quantities, but no fulfilment. According to Sigwart, incommensurable magnitudes in space are "the most striking proof against all empirical theories of Space; no actual measurement could convince us that it is impossible to express the side of a square and its diagonal by numbers of the same unit" (§ 67). I am not aware, however, that any empirical theory of Space requires actual measurements. It would be more plausible to urge that no *rational* theory of Space is compatible with the discovery of incommensurables. It is a discovery of fact made by discursive reasoning; but Reason is formed and guided by experience. The empirical growth of Space-perception dates from the antiquity of organic life; but to urge that incommensurables are therefore due to the imperfect manifestation of Being in the Phenomenon, would need an extraordinary power of keeping one's countenance.

The approximate solution of such problems depends upon the conception of infinitesimal quantities and a Limit. If any factor of conceptual Reality cannot be exactly measured so as to compare it with another, some third factor may be found which can be so measured, and which differs from the first by a very small quantity; and we may suppose this difference to be indefinitely reduced, until the third factor may be substituted for the first without assignable error. This is the familiar conceptual process of fixing upon that which is common to things and neglecting their differences. The difference between a straight line of less than any assignable length and its arc, whether in length or direction, is negligible, and a

Limit is that stage of an operation at which differences become negligible. Berkeley might have overcome his antipathy to fluxions by carrying out the doctrine of *The Principles of Human Knowledge*, that general reasoning depends upon the use of ideas, words, or other signs, in their representative character, and he would then have avoided the irony of irony misplaced. It may be doubted whether he fully grasped the significance of his own reasoning in the *Principles*; for in the *Analyst* his argument turns entirely upon the confusing of conception with imagination. On the ground of experience, comparison and abstraction, a sufficient account may be given of the Abstract Categories; and on no other hypothesis is it intelligible that their application should be fruitful in the Physical Sciences.

CHAPTER XIV

THE PHYSICAL CATEGORIES

§ 1. Physics, in the widest and most natural sense of the term, includes the whole theory of concrete existence, usually distributed under the head of Mechanics, Physics (in the narrower sense), Chemistry and Biology. The metaphysical treatment of this universal science of Nature differs in many ways from that of the special sciences. It deals only with the most general notions of the subject. It may regard certain concepts as still worthy of commemoration, though the special sciences have discredited them. It endeavours to construe in each case the whole fact of experience; whereas the special sciences, limited by methodological considerations, may neglect or even disparage whatever aspects of the fact cannot be quantitatively valued and prepared for mathematical computation; and these aspects include the subjective character of every fact. The metaphysician (in his proper function) seeks in the special sciences their objective construction of Concepts and Laws; or, if the construction is still incomplete, he must wait until it is completed: for this construction is concerned with what is not ourselves; it is essentially an inductive and tentative process, and to attempt it by any other method is a self-stultification. Still, whilst it is true on the whole that Science, by the very fact of its progress, is its own criticism, the metaphysician or any other bystander may require that concepts and laws used in the interpretation of Nature shall conform to the principles of explanation and consistency; for even the most exact knowledge ought to be intelligible: and he must consider whether concepts are possible, or have veri-

similitude in view of their history and alliances. If such matters are neglected, there seems to be a justification of the opinion that the sciences do not seek truth but are content with "working hypothesis"; an opinion which (I believe) every sincere investigator repudiates.

§ 2. That the progress of Science is its own criticism was never better illustrated than it is at the present hour, when so many beliefs are being modified or abandoned. The bystander knows not where to find footing for the soles of unblest feet. A short time ago he might have taken it as agreed upon that the factors of concrete existence were Ether and Atoms. Now the Atoms, on the one hand, are supposed to be 'knots,' 'kinks,' or vortices in the Ether, produced by some process of 'pyknosis'; the Ether, on the other hand, is said to be conceived too inconsistently to explain anything, and it is even hinted that by the new conceptions of Atoms the Ether may become superfluous.

The theory of the atomic structure of bodies seems to have been based upon their sensible comminutability. Rocks, rubble, sand, powder: the series suggests an indefinite divisibility, only checked by the reflection that division can never be destruction, and that the smallest parts must have some extension and mass to account for such properties in the whole. Hence the antiquity of the doctrine introduced into Philosophy by Democritus. And the most recent speculations on the decomposition of chemical atoms into electrons, similarly appeal to the experience that under certain conditions pieces can be broken off from atoms, and that some of the heaviest atoms, if not all, break down, or radiate, by their own instability. Ether, according to Aristotle, was the matter of the celestial regions, having the properties of permanence and circular motion, in contrast with the elements of terrestrial things that are perishable and move in straight lines. Nevertheless the notion was taken by him from folk-lore, in which the ether, or upper air, was figured as something more refined than that which we breathe. When the ether was adopted into modern Physics it was endowed from time to time with such properties as it seemed to require, as a vehicle for modes

of energy, and as a medium correcting the discontinuity of the atomic structure of things. These notions, then, of Atoms and Ether are entirely empirical: they do not involve the deepest principle of the understanding. The Atomic Theory appeals to familiar analogies in the formation of bodies, from an animal organism to Silurian rocks; whereas the continuity of the Ether is without any physical analogy in familiar experience. But even the Atomic Theory is on a different footing from the doctrines of Conservation and of Continuity in Time. Conservation and Continuity in Time cannot be disputed without abandoning all possibility of explanation; but the notions of Atoms and Ether may be modified at discretion, until by a series of trials the scientific mind shall have reached at last the most comprehensive analysis of concrete existence.

§ 3. In empirical Reality all things in Time and Space move and change, and sometimes seem to come to rest and to remain unchanged. Movement, Change, Rest are plainly given to our cursory perception: do they retain their reality when we attempt a systematic interpretation of experience?

Rest, although even Spinoza writes (perhaps unguardedly, *Eth.* ii. 13) as if it were a phenomenon co-ordinate with Motion, quickly disappears in the light of investigation. Whilst a body may often be said to rest in relation to certain other objects, it is easily shown that every body must be in incessant movement both as a whole and (if composite) in the configuration of its parts: the direction, velocity and complexity of its movements baffling imagination.

Change was said by Aristotle to comprise (1) the origination and destruction of particular things, (2) growth and decrease, (3) alteration of quality, (4) locomotion; and he showed that the last is a condition of all the others, but maintained that it does not wholly account for alteration of quality. The fact is that origination and destruction, growth and decrease of particular things, are processes common to empirical and conceptual Reality; and in the latter region, in which things exist only in their primary qualities, motion is the ground of all changes: but alteration of quality in

empirical Reality includes those changes of secondary qualities that depend on subjective reaction of the special senses; and this cannot be explained by motion, being the subjective Reality of that of which motion is itself the phenomenon and, therefore, an ultimate experience. Qualitative Change is more real than Motion, as Time is more real than Space.

Kant said that the consciousness of Change requires the contrast of something permanent in consciousness: but it is enough that something more enduring be there. The existential correlative of Kant's argument is that Change implies some identical thing that changes; and this seems to involve a contradiction, for Identity and Change are incompatible predicates; but the knot is at once loosened by observing that Identity is predicated of different things in different senses. If in space there be any simple and ultimate phenomenon, its Identity excludes every sort of Change except locomotion, which is not incompatible with Identity; and, strictly speaking, nothing else can be called self-identical. In all generated things Identity is regarded as compatible with some amount of Change, because there are limits to the appreciation of Change, and in many classes of things continuous Identity implies a series of changes. A State or a living Body is called the same, though undergoing such metamorphoses as overtake a caterpillar or a constitution; without which the existence of the thing is not fulfilled according to its nature.

Hume observed that Identity depends upon Causation (*Treatise*, Book I. Part III. § 2), and this is true of all things changeable, as we may see in several ways. Popularly, a thing is no longer called the same so far as its effects become different: a darned stocking may be the same in the economy of ownership, but not in the market. Again, as to the recognition of Identity: whereas Plurality depends upon the determination of particular Things in time and place; so that different Things may at different times be in the same place, and the same Thing may at different times be in different places, but not in different places at the same time; it follows that to trace the Identity of anything, we must

know what causes are capable of moving it and of substituting something else that is perceptually indistinguishable from it. Hence we may observe that, since Identity depends upon Causation, Causation cannot be explained by Identity: Causal Instances (even were they qualitatively and quantitatively the same) are numerically different. And since Thinghood involves Identity, we see that Causation, the latest concept to be clarified, is necessary to the understanding of Thinghood; which, seeming primitive and simple, is in some ways arbitrary and ambiguous and illusory.

But to see this still more clearly, let us consider that, as Locke says, Identity implies that a Thing has only one beginning (*Essays of H. U.* ii. 27, § 1); and this is obviously true of all generated Totalities. Now its beginning is a change or process of Causation, and its whole existence depends upon the equilibrium thence resulting. That this equilibrium should in certain cases be relatively permanent, because in fact forces capable of overthrowing it are rare or no longer active, may be admitted possible; and in that case, in the absence of adequate causes, there will be a relatively persistent Identity. Nevertheless, so far as it is true that whatever begins perishes, every such thing is a temporary result of processes of change; and, even granting that anything that begins can be permanent, yet all its qualities are traceable to the persistence of internal strains and movements implied in its constitution; nor can it be doubted that these are modified by changes in its external relations. Amongst sensible phenomena, then, an unchangeable thing has no existence; and, therefore, the question, 'how a Thing can change,' is misleading. A Thing is a process of change; even its temporary persistence is due to the uniformity of changes, that is, to Causation—master-concept of the concrete world. And, therefore, the law of Contradiction, that A is not not-A, must, in its physical application, be understood of processes: there cannot be two moving bodies in the same relations of place and time.

The concepts of Change and Identity, then, are not impossible or contradictory, although they must be cautiously

used in the interpretation of immediate experience. The possibility of forming the concept of Identity depends, first, upon the phenomena of relative Rest and relative persistence of Quality; secondly, upon the unchangeable nature of concepts themselves. But whether Unchangeableness is a predicate necessary to the ultimate interpretation of experience, remains a question for physical science: is it necessary in any way, qualitative or quantitative (other than Conservation), to the formation of an universal Science of Nature? If so, it is in that relation verifiable; and, because it is verifiable, its use is truly immanent and not transcendent; it applies to phenomena and not directly to Being.

§ 4. Heracleitus' profound intuition of the universality of Change in the sensible world is still a paradox, but less alarming perhaps to the public than Zeno's arguments against the conceivability of Motion. The public approves of Diogenes' answer, which was—to walk away: though it has been urged that this was a most disgraceful blunder, since the arguments were directed not against the fact but the concept of Motion. According to J. Burnet, however (*Early Greek Philosophy*, chap. viii.), Zeno's attack was made not so much upon the general concept of Motion as upon the Pythagorean doctrine of Space. The Pythagoreans seem to have held that Space is made up of points; and, if so, they must have admitted that any given Space, being infinitely divisible, contains an infinite number of points. It follows in four ways, according to Zeno, that Motion is impossible. For, first, no such Space can be traversed in a finite time. This, however, could present no difficulty to the Pythagoreans unless they denied that Time, likewise, is infinitely divisible. Now Zeno's third argument was that a flying arrow is really always at rest, since at each moment of time it is at some particular point of space. Burnet approves of Aristotle's observation that this "depends upon the assumption that Time is made up of 'Nows,' that is, of indivisible instants"; adding that "this, no doubt, was the Pythagorean view." So that if the Pythagoreans were really so simple as to assert infinite divisibility of Space, and deny it of Time, they cut themselves off from what might seem an

easy answer to the first argument. Apart from this blunder attributed to the Pythagoreans, it may be supposed that Zeno's argument starts from the assumption that Motion in an infinitesimal moment is not Motion but Rest; that is to say, that it merely begs the question. In any case, it is impossible to conceive of Motion unless Space and Time are conceived as continua; and that they are continua is the ground of Aristotle's solution of these puzzles. Motion is a traversing of Space in Time; it cannot be completely analysed into Space and Time; something further—an ultimate experience—is of the essence of it: and this is some excuse for Diogenes' retort. The right reply to the doctrine that Space is made up of points, is that 'divisible' and 'discrete' are very different notions; if Space, Time and Motion were not divisible they could not be measurable: but if Space consisted of discrete points, the impossibility of Motion would follow from this, that between any two points there is no room to move.

The Eleatic's fourth argument was, that if two bodies move with equal velocity past one another in opposite directions, they will do it in half the time that either of them takes in passing a fixed body—that is, each of them has in the same time different velocities. Grote thought this observation designed to show that velocity is not absolute but relative; and, in that case, it is a sound argument. However, Burnet approves of an explanation offered by Tannery: that it "was directed against a possible answer to the preceding one, namely, that in each indivisible instant the arrow is passing from one point to the next. If so, answered Zeno, motion must always have an equal velocity, for all instants, being infinitely small, are equal." But that all infinitely small instants are equal, is not necessarily true; and if it were, to assume that all motions in equal instants must traverse equal spaces, is flatly to beg the question whether different velocities are possible. It is just because velocities do in fact differ, however small the time supposed, that it is necessary to fix upon some actual motion of a body (say, a revolution of the Earth) as a standard of comparison.

But it is the second sophism (in the usual enumeration) that has excited most amazement and scalp-scratching — the famous race between Achilles and the tortoise. Should the hero give the reptile a start, he can never overtake it: for (granting, for argument's sake, that they can move at all) by the time Achilles reaches the tortoise's starting-point, it will have got beyond it a certain distance; whilst Achilles is covering that space, the tortoise will have moved on again: and so forth *ad infinitum*. This description of the event, however, takes no account of the diminishing times of the several distances. For suppose that, as Grote puts it in his *Plato* (chap. ii.), whilst Achilles advances 100 yards (say in one minute) the tortoise advances 10 yards; then whilst Achilles covers these 10 yards (in $\frac{1}{10}$th of a minute) the tortoise covers 1 yard more, and Achilles walking that yard (in $\frac{1}{100}$th of a minute) is still $\frac{1}{10}$th of a yard behind the tortoise. Therefore Achilles will never overtake the tortoise *in the times supposed*, as I have supplied them (or $t + \frac{t}{10} + \frac{t}{100}$, etc.). But this implies that the race is not to last very long; for if it only lasts one and one-fifth minute, Achilles will be nearly 9 yards ahead (cf. Mill, *On Hamilton*, chap. xxiv.). So much in discharge of the duty, imposed upon every writer on Metaphysics, to offer some reflections upon the father of Dialectic: it was not left to him to make men puzzle-headed; but he first had a happy knack of displaying our natural endowment. Motion is so far from being inconceivable that only by a conceptual treatment can we get any clear view of it. It cannot be necessary here to show that all motions are relative both in direction and velocity; nor to answer the question how Motion can originate from Rest or subside into Rest, seeing that there is no such thing as Rest.

Motion, then, being an universal condition of all bodies, there can be no cause of it in general, but only of its changes or transformations, that is, of Acceleration or Retardation, or of Direction, or in the form of Energy. The specific forms of Energy and their characters are a modern discovery, owing little to early philosophers, and still less to primitive folk-lore: for from these sources came the notions of Animism, occult

principles, fluids, which were rather a hindrance than an aid to positive investigation; except that the subjective notion of Force, vaguely generalising all manifestations of energy, mechanical, chemical, organic, gave a certain unity to the object of investigation. But as to the phenomena of Acceleration and Deflection, these are instinctively mastered by most of the higher animals, conspicuously by birds, necessarily by all men in the hunting stage of culture, most perfectly by the champion of the billiard-table. In this sense, all who study science begin with an organic knowledge of the laws of Motion.

The conditions of the movements we are continually witnessing are, for the most part, extremely complex; and a theory of Motion requires an analysis of these conditions into their elements. In the experimental sciences attempts are made to isolate the causes of movements; but as experiments are always imperfect, they serve chiefly to verify the theories of Statics and Dynamics, which proceed from abstractions. Newton's Laws of Motion, for example, are plainly abstracted from experience by neglecting the differences of experience and following amidst all perplexities the common fact. This process is aided by the scene the heavens present of motions under comparatively simple conditions. In experience every movement is reinforced, opposed, or deflected, and therefore alters its velocity or direction; 'below the Moon' the molar motion of particular bodies is always at last frittered away until they come to relative rest; and even in the heavens the direction and velocity of all bodies change according to the position of other bodies: but, omitting all the conditions of change, infinite and infinitely differing, there remains movement itself, unconditional, uniform and everlasting. Such is Newton's first Law: the second and third declare the conservation of Motion (or Force) amidst all interactions; that is, Continuity and Equality, the principles of the Understanding.

§ 5. Motion implies some Matter that moves, a tangible mass, or molecule, or the ether. Our own movements are accompanied by 'sensations of effort,' which usually are more intense the more rapid our movement. Sensations of

the same class are felt in dragging a load or in trying to stop or deflect another moving body: hence we form a notion of Force as the cause of movement or of the checking of movement. In interpreting the movements of Nature, man, before the rise of discrimination and reflection, reads this experience into other bodies; not only into other men and animals, but into swaying trees, rushing rivers, falling rocks: it is one of the roots of Animism. And although this interpretation would be defended by very few men in cold blood, it still haunts our imaginations, and makes it easy to speak of motion as due to Force. According to the doctrines of this book, such an instinctive view of Nature is not false, but only crude. It is, nevertheless, misleading; for, using different words, men regard them as standing for different things, and speak of Force as impressed upon Matter and of causes as forces. Force, however, can nowhere be found, nor imagined, nor even conceived as a phenomenon, apart from Matter; there is no way of measuring or conceiving it as a fact of the objective world, except through the very movements it is supposed to cause.

'Force' does not explain "the particular go" of anything. Effort, being subjective, cannot be directly compared, it cannot be a standard or a unit of measurement: in producing the same effect (movement or resistance) it varies in different men according to their strength, and in the same man according to his age, health, etc. So far from giving a measure of Motion it is supposed to be measured by Motion, according to the doctrine that "causes are measured by their effects": a doctrine only applicable to "occult" causes; since in true causation amongst phenomena both cause and effect can be measured and equated.

Hence arises a tendency to disparage the notion of Force, and even to discard it altogether, because it is useless in Mathematics. But, after all, to act upon this principle would sadly impoverish the world. The facts of experience, even though subjective, cannot be abolished for the convenience of Methodology. Mach, in his *Science of Mechanics*, writes thus: "Force is any circumstance of which the consequence is motion.

. . . In the motions which we ourselves determine, as well as in those to which we are forced by external circumstances, we are always sensible of a pressure. Thence arises our habit of representing all circumstances determinative of motion as something akin to volitional acts—as pressures. The attempts we make to set aside this conception as subjective, animistic and unscientific fail invariably. It cannot profit us, surely, to do violence to our own natural-born thoughts and to doom ourselves in that regard to voluntary mental penury" (chap. i. § 5). In strict science, on the other hand, "force is not a something that lies latent in the natural processes, but a measurable actual circumstance of motion, the product of the mass into the acceleration" (chap. ii. § 8). That is, if used in science at all, so the notion must be understood.

§ 6. The Matter that moves or seems to rest is known to us by various properties—Inertia, Mass, Space-occupancy (volume with some limit to compressibility), Elasticity, etc. —all of which are derived from the experience of Resistance to our efforts, which presents the world of Not-self in the most irreducible and uncompromising form. Inertia is usually said to be the property that all bodies have of remaining at rest unless some cause sets them in motion, or of persisting in rectilinear motion at constant velocity unless some cause impedes or accelerates or deflects them. But since Rest is an illusion, to "set in motion" is always to alter a body's direction or velocity. The notion of Rest has led to the coupling of 'inert' with 'dead': so that 'inert, dead Matter' is familiar rhetoric. Mass is the same property as Inertia conceived in a more definite way. The Mass of any body is measured by the effect produced by it upon any other body that alters its velocity or direction. The attempt has been made to define it by the number of atoms contained in a body; if all atoms are alike inert, and gravitate equally, and are all of the same size, the greater the number of them in any aggregate the greater the mass; and the greater the number of them in a given volume the greater the density. This doctrine is specious because it brings several concepts—Mass, Weight, Density, Atom—into a simple relationship.

But the atoms here assumed are not the ordinary chemical atoms, which differ in size and weight: they are not any known atoms, but merely units of Mass, obtained by hypothetically dividing that which their multiplication is to explain. It is, therefore, no true explanation, though it may prove to have been an anticipation of the truth if the chemical elements should be resolvable into homogeneous particles of Protyle. Meanwhile we may be content with Mach's definition: "All those bodies are bodies of equal mass, which, acting on each other, produce in each other equal and opposite accelerations" (*op. cit.* chap. ii. § 5).

The doctrine that sensible bodies are aggregates of atoms at short distances apart, has also been thought necessary to the explanation of Elasticity: when an elastic body is compressed and re-expands, it is easy to suppose that the interspaces of its structure decrease and recover, but not that the atoms themselves change their shape or volume; for they have no parts capable of changing their relative positions. But although an ultimate physical Atom has (by definition) no physical parts, yet if it has any volume there must be geometrical parts: and that these are incapable of altering their relative positions, of being compressed and re-expanding, seems to be an assumption of that which should be left to inductive investigation. That there is, in any case, some limit to compressibility is asserted by the axiom, that 'two bodies cannot occupy the same place at the same time'; and this is supported (1) by experiments upon bodies under pressure at the lowest temperatures, and (2) by the principle of Understanding, equivalence or conservation. Otherwise, under sufficient pressure, Matter ceases to differ from Space; which is absurd, for if it be the same as Space, how can it offer any resistance at all?

§ 7. The tendency of bodies to move or to maintain an equilibrium is imagined as impact, attraction or repulsion, by analogy with our own experience of striking, pulling or pushing. That bodies gravitating pull one another is easily believed, because, when we lift weights, they seem to pull us; that a magnet pulls another magnetic pole with one pole and pushes

it away with the other may (with strong magnets) be sensibly felt, if we hold either magnet in our hand. If we consider the commotion of molecules in a gas, it may be supposed that, could we tie one of them by a fine thread, and were our muscle-sense sufficiently discriminative, it would be possible to feel it twitching and rushing hither and thither like a trout in a pool. In a luminous body the agitated molecules may be thought of as pushing the adjacent ether and throwing it into waves. Yet, on reflection, the analogies with our own exertions in striking, pushing or pulling, fail in all those cases in which one body influences another at a distance, without apparent contact. Hence the possibility of *actio in distans*, or rather the conceivability of it, is often denied, on the ground that there is no sensible experience on which to base such a concept; the exertion of force without contact is supposed to be too unfamiliar to the imagination. Lange assumes that action at a distance is less picturable than impulse (*Hist. of Materialism*, iii. 3). Gravitation being the most conspicuous case of what looks like action at a distance, many attempts have been made to explain it by molecular or etherial pressure: hitherto (I believe) without much result.

I cannot see that action at a distance is less picturable than impulse; and the alleged difficulty of conceiving it is obscure to me. That the concept exists in fact is shown by this, that the law of gravitation assumes it: for that reason, indeed, Newton did not regard it as a final explanation. But the concept is also supported by sensible experience, and is, therefore, imaginable: when we lift a weight, it is true that we are in contact with it, but the weight is not apparently in contact with the ground. In falling or jumping we have the experience of being pulled to the ground without being pushed or grasped; and even of reciprocally pulling the ground to us, though this side of the fact is submerged by the relative smallness of our own mass. It may be said that when we jump from a height, there is no muscular effort needed to get to the ground; and that is true, but a pure mechanist will hardly urge it; for it implies that 'force' is to be interpreted not by acceleration but by sensation. It may also be said

that by Inertia a body is incapable of moving itself; and this may be true of any body in isolation, but all movements of actual bodies take place in relation to one another. Nothing in the concept of Inertia requires that the reciprocal action of bodies shall always be by contact, never by remote determination. And I agree with those who think that the maxim that "a body only acts where it is," has been greatly overvalued: in discussing action at a distance, it is a *petitio principii*. It would be quite as reasonable to say that a body is where it acts, that its existence is not necessarily limited by its tangible superficies.

Perhaps to speak of bodies 'acting' needs caution: the methodological problem is to generalise the conditions of Motion; if a relation of remote bodies be sufficient, let it be admitted; if pressure be the only cause, let it be shown. The alternative to absolute Mechanics is to accept the contrast of Actual and Potential Energy, Energy of Motion and Energy of Collocation. This contrast seems necessary in other cases than gravitation; and there is perhaps a certain fanaticism in insisting upon a single ground of physical changes. Simplification may be illusory: duality, contrast, opposition, may be universal in Nature; just as discrimination is as fundamental as assimilation in the Understanding. Hence there might be an error of the same kind in arguing that all physical changes are actions at a distance; that, for example, chemical combination happens between molecules at a distance, however small. If all matter is discrete (a sceptic might say), certainly our bodies are, as an X-ray photograph will show; and therefore our own pulls and pushes imply only a relative contiguity of parts. It may be doubted whether immediate impact or contact is ever possible. To reply that in none of these cases is there action at a distance, because everywhere the Ether intervenes, is vain without some definite account of how the Ether is helpful. Such an explanation must be given in each case, and the explanations must agree together: otherwise (the sceptic might conclude) the Ether is no better than Mumbo Jumbo.

§ 8. The phenomena of chemical Affinity must needs set

the poets agog: to whose warm imaginations the distracted elements seem to rush into each other's arms. Cooler heads, looking through microscopes, and seeing things happen amongst the simpler forms of life in which bisexual generation prevails, have supposed that sexual attraction even in higher grades of organisation may be, in subconscious regions, nothing else than the impulse of the spermatozoid seeking the ovule —*actio in distans* notwithstanding—and, further, that this impulse may be of a chemical nature. Here are two ways of identifying chemistry with holy matrimony: in their æsthetic tone how different! But according to the doctrine of Chap. X. § 3, the various degrees of consciousness in the world have their transcendent Being manifested by corresponding degrees in the evolution and organisation of matter; they are all of them real, and none of them is to be confounded with another.

Chemistry is more selective than gravitation, and in this approaches life; and reviewing the series—Mechanics, Chemistry, Organisation—the philosophic investigator is dissatisfied as long as they appear to be three separate and irreducible manifestations of energy. All known bodies display inertia and gravitation unconditionally. The constituents of all bodies are capable of chemical activity, but its operation is conditional on temperature, relative position, heterogeneous structure and other circumstances. Life is shown only by comparatively small portions of the material world; its activities are the most special and complexly conditional of all. Hence, the first impulse of generalisation is to attempt the reduction of the forces of chemistry and life to those of mechanics; and a "mechanical theory of the world" has been regarded as possible or even as a regulative aim of natural science. The mechanical theory excites in some men an aversion which is perhaps due to the illusion, that deduction effaces the differential features of that which is deduced; although it might have been supposed that this prejudice could only be fostered by exclusively mechanical studies. But the suggestion to explain the known activities of body by deriving from one grade of them the remainder of the scale, may be misleading:

another course may be necessary, though it seems more obscure, namely, to explain all the known laws of material activity by discovering still more general laws of protyle from which the known laws may be derived. Gravitation, Chemistry, Vitality may be differentiated derivatives of those laws of protyle. At least such an explanation would agree with the general character of evolution, as not a linear procession of forms, but a differentiation of them from some type which is for the most part no longer directly known.

The proposal to reverse the mechanical theory, to explain all nature by the type of living activities, overlooks the conditions of explanation in the region of phenomena, namely, the discovery of resemblance. Living bodies gravitate, and consist of chemically definite elements; they are full of machines and chemical experiments; and so far they may be explained by Mechanics and Chemistry; for the fact that in living bodies mechanical and chemical properties subserve organic ends, has nothing to do with such explanations. But the characteristic marks of the living body—cell-structure with the functions of assimilation, adaptation, reproduction (implying heredity)—are nowhere found in the inorganic world, and throw no light upon its processes. It is not in the region of phenomena, but in the region of Being that life, as the vehicle of consciousness and self-consciousness, illumines the abyss: not, it is true, by scientific explanation but by metaphysical suggestion, indicating the unity of all phenomena as co-manifestations of that which is known to us in thought and feeling.

Organisation implies a totality generated under certain special conditions, increasing by growth and differentiating its structure, in such a way that its parts depend each upon all and all upon each, and that all parts tend to preserve the totality for some normal period which is closed by dissolution. The notions of generation, growth, development, dissolution, belong to Biology; they are also of great interest in Politics and Morals, and some of their metaphysical significance has already been indicated. But the chief metaphysical interest of organisation lies in that co-operation of parts to a common

result which we instinctively interpret as Means and End. This is a subjective Category and belongs to the next chapter.

§ 9. The sum of the movements and changes of bodies makes up the course of Causation in the World. The category of Causation comprehends the conservation of matter and energy, and the truth that in similar conditions of change there are similar redistributions of matter and transformations of energy (cf. Spencer, *First Principles*, §§ 63-65): Continuity and Equality in the contents of existence and Uniformity in its changes.

We have seen in Chap. VII. § 7, how ancient is the belief in the persistence of Matter: announced by the Ionian Cosmologists; traceable in barbaric cosmogonies and mythologies, however extravagant and incoherent; forced upon primitive man by the experience that things which come into existence are modified from others, particularly in generation, growth, corruption, and above all in the works of men's hands. Direct experience, however partial and immethodical, whilst begetting a general expectation of constancy and routine, and a disposition to accept precise views when demonstrated, yet fails to give a prevailing and definite belief in the Uniformity of Nature. This may be seen both in the popular mind in our own day, in spite of the increasing exactness of modern industry and commerce (though I believe this is a more effectual schooling in causation than is generally known), and also in the history of Philosophy. For we find that even Aristotle recognises as determining conditions of events not only Divine Reason and Necessity but also Spontaneity and Chance. In this he seems inferior to Plato, who ascribes the World's formation to the Divine and rational Good, and even its deterioration to a certain Necessity in things. But we may trace Aristotle's apparent backsliding to his closer attention to human affairs and all kinds of matter of fact, and to his love of truth, which compelled him to recognise much that he could not explain; for what are Accident, Spontaneity, Chance, but the acknowledgment of this? We are apt to overrate Aristotle's love of system, and to underrate his loyalty to fact such as he found it. The

Stoics and Epicureans had simpler and juster conceptions of causation, though far less care for accurate inquiry; still the Epicureans retained the notion of Chance at the basis of their system. The Stoics, although by thrusting upon Divine Reason the function of Providence they used the notion of Final Causes in a weak and tinkering fashion as subserving particular utility, yet in their stricter Logic they resolved it into antecedent plan and result (Zeller's *Stoics*, chap. vi. B 2); and by the conception of Divine Reason as the active force in Nature they got rid of Chance; for whoever in earnest makes Reason king necessarily expels Spontaneity, Accident, Chance and every other sort of rebel from the realm. But how little right had they to this exalted conception, if the right to a conception depends upon one's power of verifying it! We must recognise the part played in the progress of thought by unjustifiable deduction. The Stoics' Law was merely deduced from the idea of active Reason: and to them it was less philosophy than fanaticism. In fanaticism Aristotle was deplorably wanting: therefore he could not assert the creative power of Reason, nor deny the automatism of phenomena, and therefore the better man had the worse doctrine.

I do not know how far to attribute to the growth and establishment of the belief in Reason (that is, God), as the creator and sustainer of the world, the fact that in modern Philosophy a belief in Chance hardly appears, except in imperfect notions concerning the freedom of the human will. But in the special sciences the discovery of Laws and the discrediting of Chance and Spontaneity has been the work of a small class of minds, in whom the tracing of Continuity, Equality, Uniformity, is a constructive instinct. They or their ancestors have somehow profited more than the rest of us by common experience, and the result is this genius. That the laws of Mechanics, for instance, are based upon instincts that spring from the self-analysing process of experience itself in a growing mind, has been shown by many writers, and by Mach with especial force, from his intimacy with the history of the subject and from his own lucidity of introspection.

If the conservation of energy is less traceable in popular thought than the persistence of matter, we may perhaps account for this by the doctrine of Animism; which, by supplying an internal source for the movement of everything, distracted attention from its transfer from one thing to another. Internal sources of movement in fact there are, that is, stores of potential; and this may account for the infrequent statements even in the history of Philosophy of general principles concerning Motion, and also for the assumed reality of Rest. I know of no earlier statement of anything like the Conservation of Energy than that of Epicurus in his *Epistle to Herodotus* (preserved by Diogenes Laertius), namely, that the atoms are constantly in motion, and that from the non-resistance of the vacuum their velocity is always the same. Descartes says it seems clear to him that God in the beginning created matter together with motion and rest, and maintains them in the same quantity (*Principia*, ii. 36). Yet Kant finds no principle of Motion amongst the Analogies of Experience. Within certain limits the conservation of Energy was expressed by mechanicians and astronomers, as in Newton's Laws of Motion; but its detailed investigation in the theories of Heat, Electricity and other modes, and its universal statement, remained for the nineteenth century.

The conservation of Matter and Energy is usually regarded as confirmed and even established by the results of Mechanics, Physics and Chemistry; though it is admitted that neither the mass nor the energy of the atomic world alone need be constant, because of its relation to Ether or Protyle (supposing this to be in no sense atomic), and that, on account of the degradation of energy, we cannot be confident that the world's capacity for work is conserved. We have already seen that the equality of contents in all the transformations of Nature is a necessary condition of Understanding; but that objectively, as a Law of Nature, it is a postulate that can only be verified conditionally within a limited experience, and can never be submitted to exhaustive proof. Of our limited experience it may be unreasonable to assert either that it is, or that it is not, a fair sample of the Universe. Still, con-

servation is true as far as our knowledge reaches; we are aware of no exception, and no alternative is offered in the shape of any definite physical doctrine. Whoever doubts the universality of conservation would do well, if he entertains any Philosophy of Nature, to offer some alternative hypothesis clearly formulated, in order that we may see what it is like. To disclaim a Philosophy of Nature as too ambitious an enterprise, is to relinquish the problem of Understanding, not only as to the whole world but as to any fact or process that occurs in it: for the understanding of any part implies some view of the whole. At present, all definite explanations of phenomena are affiliated to the principle of Conservation. And whoever shall construct a system of Nature, as comprehensive and consistent as the existing sciences, upon some other principle, will do more to quell the arrogance of text-books than all the Sceptics that ever lived.

In modern Methodology a place is found for 'Chance,' but the analysis of it presupposes Causation. Contingency is recognisable as dependence on a cause of whose occurrence in any given case we are uncertain. Necessity, on the other hand, a refuge to Plato and Aristotle, is a term malodorous to some moderns who accept the Uniformity of Nature. No doubt it may be misused to identify moral obligation with the actual order of the world, or to raise personal prejudices to the rank of universal laws: it lends itself to rhetoric; and, in fact, by association with Fate and Predestination, it has acquired a mythological tinge. Moreover, there is not yet sufficient ground for asserting the necessity of natural law. I say this because, speculatively, it seems just; though for myself I cannot feel it. Still, the invariability of law is necessary to reasoning, to generalisation and inference, and from Reason nothing could proceed but Law; so that I bear with those who, knowing no higher praise, give the name of Reason to Law itself; for it is the ideal of reason, universal and unerring, and to human reason the way, the guide and the goal.

§ 10. Narrowing our view from the Uniformity of Nature as a whole to the particular events selected and defined for

observation and experiment, as Causes related to Effects, we meet with many difficulties in the isolation, measurement and comparison of phenomena, concerning which the works on Logic and Method must be consulted. The existence of the World in its everlasting movement and change, is conceived of as a process in Time, continuous, invariable in its laws, unconditional (since there is nothing outside it) and always equal to itself; and an ideal Causal Instance, or particular relation of events to be investigated, may be conceived to elapse as an independent system, and to have the same characters as the World-process. That no such Instance is obtainable in a test-tube, your sceptic never wearies of rejoicing. It is true, of course, that no Causal Instance is ever unconditional, and that (strictly) none can ever be repeated; and it is inferred that generalisation must always be fallacious. Similarly, to the moral maxim 'that what is right for one is right for all in the same circumstances' (their actions having the same consequences), it may be objected that the circumstances of two men are never the same. The solution of these puzzles is, that observation or experiment is not the whole process of investigation; that what we seek is the law of each tendency, and the resultant of the tendencies combined in any event; and these are found by reasoning on the empirical data. That the conceptions of tendency and resultant are clearer in Mechanics than in more concrete sciences, is one reason why mechanical explanations are preferred.

The complexity of the Category of Cause and Effect has hindered its elaboration in the human mind; it is the latest of the master-categories to have become definite, and yet it may not be finished; but many have worked by it with clear intelligence who could not enounce it in terms. Since movement with consciousness precedes the consciousness of movement reflected in apperception, there is an ancestral or congenital basis of this Category as a disposition to perceive; may we not say that it is the core of the disposition to expectant attention? Again, since sensible Causes are moving bodies and collocations of bodies, a familiarity with certain regular series of events is acquired during the growth of the

individual's perception of an external World; and even a practical command of such series, as we see in children and even low-type animals, before the rise of self-consciousness; and this is the ground of the Category's objectivity.

In the human race, the understanding of Causation was very early confused by the doctrines of Animism and Sympathetic Magic. The development of imagination in primitive man had certain disastrous consequences, moral and speculative. It encroached upon the objectivity of Nature, and often left its victim less intelligent than an unembarrassed ape. The mind seems to have grown faster than it developed, and so was given over to picture-thinking without the power of analysis and abstraction. In a rich but unco-ordinated cortex excitement is localised, and therefore intense and uninhibited, and issues in violence and absurdity. Whenever total ideas are relatively isolated and, therefore, uncriticised, they are apt to be reified and to compete with perception; and whatever objects enter into them are believed to be physically connected. Hence clothes, weapons, locks of hair, whatever belongs to a man, especially his name; and, again, effigies, mimicry, descriptions, whatever resembles him, is believed to be a part of him in such a way that whatever good or evil happens to them, or is invoked by means of them, falls upon him. This is not merely association of ideas, but is supported by a theory of some continuity of existence between such things, along which influences travel as by media, such as the air blowing or breathed, or shafts of light and shadow. The idea of sympathetic Magic is thus a confused matrix in which all sorts of relations, Likeness, Coexistence, Succession, are huddled together as equally connections of Causation, and from which the true relation must be gradually eliminated.

In the course of dissociation, relations of Succession as characteristic of Causation became predominant. On the whole, this had happened amongst the Greeks; as we may see in Plato's satirical description of the men in the cave, who sat watching the shadows and trying to remember which were accustomed to go before and after, and to guess which would come next: an odd anticipation of Hume! But meanwhile

the type of human agency, and the belief in Animism, had filled the world with purposes, established the doctrine of Final Causes, and precluded the distinguishing between conscious activity and physical causation. And the successiveness of Causation was not so definitely conceived as to prevent its being confused with the relation of Substance and Attribute; as appears from the causal conception of Ideas by Plato and of Forms by Aristotle, and even by Bacon. For I take it that Bacon's Form is the *latens schematismus* which determines the attributes; so that, when altered by a *latens processus*, other attributes appear. Moreover, the notion of Substance as a certain undiscoverable inwardness of things had become allied with the doctrines of sympathetic Magic to form the theory of Occult Powers. According to this doctrine, we must apply the term cause "to a certain conception, force, abstracted from all special events and considered as a quality or property by which one body affects the motion of another. And in like manner in other cases, cause is conceived as some abstract quality, power or efficacy by which change is produced."

Hume's great service to the metaphysics of Causation was to supersede occult causes by the notion of a sequence of phenomena. His definition of Cause is clumsily expressed, but amounts to this, that the cause of a phenomenon is its constant antecedent. Occult causes were not conceived as transcendent; and the doctrine of this book that there are changes in transcendent Reality or Being, of which the course of phenomena is a manifestation, is not a doctrine of occult causes: I have shown in Chap. VIII. that Manifestation is a distinct Category, one-sided and merely orectic. The phrase "immanent Causation" involves a confusion of ideas. Occult causes were regarded as entering into the tissue of natural processes, but as essentially unsearchable; and, under the name of powers or virtues, were the discouragement of induction, the refuge of ignorance, and a fastness of Scepticism. That causation is concerned with things unseen and, therefore, gives no explanation of phenomena, was one of the tropes of Ænesidemus.

It is a serious fault of Hume's definition of Cause that he

calls it an "object precedent" instead of an event. Another fault was pointed out by Mill, namely, the being content with the constancy of the antecedent, without requiring the absence of other conditions; but Hume's second definition of Cause—"where, if the first object had not been, the second never had existed,"—may imply its unconditionality. Mill, at any rate, insisted on the unconditionality of Causation; although it is true that to discover the antecedent that is all, and no more than all, that is necessary to the occurrence of a given effect, is impracticable in a particular investigation. The conditions constituting a Cause are relations of Space and Time, and Agents. Agents are material things, popularly regarded as exerting force, and contrasted with "patients," but of which all that we can say is, that without their presence in such kind and quantity, and the movement of some of them relatively to the rest, the effect we have in view does not happen. Their agency (if the term be allowable) depends upon their Reciprocity or relations to one another in space, that is, upon distances and directions of movement. But as it also depends upon their velocity, and as all movement implies time, time is also a condition. It is true that if we conceive the reduction of causation to its simplest type, it is an immediate sequence, or the time of its happening is infinitesimal: because (1) motion is continuous, and (2) any interval admits other agencies and destroys the unconditionality of the process. But observable processes take an appreciable time; and causal instances may be selected occupying a less or greater time according to the character of the inquiry: the causes of double refraction and of coral-reefs are contrasted cases. Still, the simplest type of causation is also the ideal of knowledge concerning it, and is pursued by tracing in the unwieldy instances (say) of Geology an indefinite multitude of chemical and physical instances.

With Mill causation remained a qualitative conception, although the ancient doctrine of the persistence of matter and the maxim *causa aequat effectum* strongly drew attention to its quantitative aspect. Until the conservation of energy was discovered the quantitative content of the notion could not be definitely formulated; yet J. R. Mayer, one of the discoverers

of that principle, begins his first essay by deducing it from the maxim of equality in causation (*Forces of Inorganic Nature*). Bain then, in his *Inductive Logic*, identified Conservation with Causation, and used it in deducing the canons of experiment. The principles of Conservation increase the definiteness of Unconditionality as a mark of Causation. For when is a cause unconditionally adequate to an effect? When the two are equal: for if the effect is the greater, the whole cause cannot have been discovered; and if the cause is the greater, some portion of the effect must still be unexplored. This brings us back to the principle of explanation.

Nevertheless, the interpretation of Causation as merely a redistribution of Matter and Energy withdraws it from the foreground of Empirical Reality into the conceptual world of the physical sciences. Causation becomes an exclusively physical Category. At the same time some excuse is made for the old doctrine of occult causes: which now appears as one of those shadows of approaching truths that so often fall across the path of Philosophy, and now lead, and now mislead, the wayfaring man.

CHAPTER XV

CATEGORIES OF SUBJECTIVE ACTIVITY

§ 1. CAUSATION is an exclusively Physical Category, but its common use gives it a much wider scope. Sensations are said to be caused by stimuli; and many have held (on various grounds) the position of Schopenhauer, that volition is an immediate consciousness of causation; that, therefore, Will is indicated as the essence of the World, and that all the forces of Nature are manifestations of Will. But whilst it is true that our experience of voluntary action has had great influence in moulding the concept of physical causation, since the actions and reactions of phenomena have been interpreted in analogy with our own experience in moving or being moved, in striking or resisting; still it appeared in Chap. X. that consciousness is neither substance nor energy and, therefore, cannot be a cause; and this was confirmed in Chap. XI. by a review of the history of doctrines concerning the Soul. At the risk of some repetition I must offer further reflections upon the relation of mind and body; but the pith of it all is, that organised bodies and all things in Nature are phenomena, whilst consciousness is not a phenomenon but immediate Reality. The phenomenon is empirically real, and even immediately real, considered as a construction in consciousness itself; but standing, as it seems to, in opposition to the Subject, it is not Being, but only represents it. The phenomenon, however, is not a construction in Self-consciousness, for it exists before that arises (whence its opposition to the Subject); but in the generic growth of consciousness the phenomenon is differentiated as the symbol of Being, and defined by Inertia, Motion and other attributes,

as if these were ultimate facts of experience; whereas Volition is a development of consciousness in its subjective Reality, having no Inertia, Mass, Motion, Solidity, Elasticity, Attraction, Repulsion, nor any single physical quality.

For all subjective changes the term Activity seems to me the most suitable that can be found. In subjective changes there are many degrees of Activity, and at the top of the scale lie the intense experiences of volition: or near the top, for there is a vision and a felicity of achievement beyond endeavour.

If the term Activity be adopted as the Category of subjective change and (more particularly) of purposeful change, in speaking technically we ought to restrict it to that sense. It is quite useless to set it up as a higher concept, inclusive of Causation: that is, to substitute one obfuscation for another. The present use of Causation for both subjective and objective processes (as by Wundt), and also for the supposed "interaction" of Object and Subject, is extremely confusing; and to use Activity in the same way would be no gain at all. But 'subjective Activity' and 'objective Causation' are an intelligible contrast. For the "interaction" of the heterogeneous some expression should be found as colourless as possible: 'parallelism' is in vogue, but is too diagrammatic; for psychological purposes, 'correlation' is enough and is, therefore, to be preferred.

To use any one expression for these three facts, subjective Activity, objective Causation, and the Correlation of body and mind, is to disguise the profound differences that ought to be recognised between consciousness and energy, reality and phenomenon. Energy and consciousness cannot be assimilated without either depriving energy of mass and movement, or bestowing these properties on consciousness; materialising consciousness, or dematerialising energy. Body and mind cannot be considered as interactive, or even parallel, without placing them on the same level, either as both substances or both phenomena. Descartes conceived them as both substances, but in such a way that interaction was impossible without the assistance of God; still the co-ordination

of them upon the same plane of existence facilitated the notion of their mutual influence, whether direct or indirect. As a matter of fact, however, body and mind are in no sense two substances, and are so far from being on the same level that the notion of interaction between them is the greatest absurdity that speculation has adopted from popular delusions. The body is an empirical substance, and the mind is not: the mind is a process of ultimate Reality, and the body is not; for empirical substance is itself a phenomenon. Now a phenomenon cannot influence that upon which it depends; it cannot influence the transcendent Substance or Being on which it depends for existence, nor yet the Subject on which it depends for representation. It cannot, therefore, be the stimulus of sensation; for sensations are what the phenomenon *is*, or (rather) sensations are the elements out of which it is constructed. And again, Being cannot influence the phenomenon as knowledge; nor can the Subject influence it as existence, or in the modes of its existence. Volition, therefore, cannot be the cause of movement; it is the consciousness of something that happens in Being and becomes manifest in the phenomenon, but it does not determine the happening.

Absolute unconditional Reality is conscious Being: in experience it is individuated as a World of bodies presented to conscious Subjects; and amongst these bodies are the organisms that are the phenomena of Being so far as it is conscious in each Subject. Every change or movement in the World of things makes manifest a change in Being; it is not caused by, but is the phenomenon of, that change. Those changes of subjective consciousness which we call sensations imply changes in Being so far as it is manifest in other bodies, transmitted to Being so far as it is manifest in that body in whose consciousness the sensations occur. And those changes of consciousness which we call volitions imply changes in Being so far as it is manifest in the organism of the Subject that wills, transmitted to Being so far as it is manifest in some other body or bodies and in their movements.

If this painful account of what seems so familiar and easy, until you try to understand it, has any truth or likeness to

the truth, it follows that the doctrine of the parallelism of bodily and mental changes, invented to circumvent the Cartesian *impasse*, errs in the opposite way. For whilst Descartes took body and mind to be two substances, this hypothesis treats both of them as phenomena. According to Spinoza, ideas and bodies are modes of the attributes of thought and extension. There is no interaction between ideas and bodies; each idea is to be explained by antecedents in its own kind, and so is each body; but the two series of modes always correspond, because they are effects of the same Substance; and they are so entirely upon the same level that Substance or God, so manifested, may be called "a thinking thing," and "an extended thing" (*Ethica*, ii. 1, 2). But when we remember that Spinoza defines an attribute as "that which intelligence knows of Substance as constituting its essence" (Book I. Def. 4), it seems clear that intelligence cannot know anything as an ultimate character of existence except consciousness. It is, therefore, justifiable to say that Substance, or God, or Being, is a thinking thing, but not that it is an extended thing. It has been shown that extension and body are phenomena constructed in the generic consciousness to represent the transcendent Being; and we cannot help inferring that relations corresponding with the coexistence and order of phenomena in space appertain also to Being, especially as they are found in Self-consciousness; but extension is a character of the phenomenon alone. Mind and body, therefore, are not upon the same footing, and metaphysically the doctrine of parallelism is untrue.

Upon the ground of Hume's phenomenalism (by the way) an attempt may be made to resuscitate the popular delusion that a volition moves the body, or that a stimulus causes a sensation. For causation, according to Hume, is an invariable succession of phenomena; why then may not bodily and mental phenomena, if uniformly thus related, be reciprocally cause and effect? But this comes of overlooking the unconditionality of a cause. Suppose that a certain stimulus is always followed by a certain sensation: this is not the whole effect. Suppose that a certain action always follows a

certain motive: this is not the whole cause. Without molecular disturbance in the cortex, a motive would not issue in actions, nor a stimulus arouse a sensation.

But although processes of consciousness are not phenomena, it is convenient to treat them as such for the purposes of Psychology, working as a natural science; and in determining the physiological conditions of sensation and volition the hypothesis of parallelism or correlation is indispensable. Not that a complete parallelism between mental and organic changes is open to observation or to simple inference; for only the higher grades of consciousness are observable; and if these are correlated with the cortex, there remain profound regions of subconsciousness to be otherwise assigned. Wundt, indeed, holds that "there are two concepts that result from the psychical combinations, which, together with their affective elements, lie entirely outside the sphere of experience to which the principle of parallelism applies. These are the concepts of *value* and *end*" (*Outlines*, § 22). But since the words *value, end, better, worse,* with their associates, whether spoken, heard or thought, are admitted to have parallel physical processes, if there are no physical processes parallel with their meanings, the course of physical causation must be interrupted whenever they are intelligently acted upon; for it is their meanings that determine volition. Such a thrusting of mysticism into a natural science is most mischievous. It stirs up a cynical opposition, and sets men upon calling the mind an "epiphenomenon," perhaps the most foolish phrase that ever was coined; and it may arouse the unjust suspicion that Psychology is not written disinterestedly, but modified to conciliate the supposed trend of contemporary Schwärmerei. There is a better way of thinking nobly of the soul. Still, the study of Physiology and Psychology should never blind us to the truth that consciousness is not really an activity of the body, but of transcendent Being so far as the body expresses it. The transcendent nature of that activity I do not pretend to explain, or understand, or name: parallelism, correlation, unity, are alike unavailing in a region where none of our terms can be just.

§ 2. Volition, then, as a conscious process, is an activity of Being, not dependent on phenomena, nor (strictly speaking) upon natural laws; and such is Kant's doctrine of Freedom. But this immanency (if I may so express it) of volitional activity, this non-dependence upon phenomena or upon laws of Nature, does not imply spontaneity, contingency, irregularity, or any deviation of character from the uniformity of Nature. For volition and the laws of phenomena are manifestations of the same Being, the former immediate, the latter conditional; the laws of Nature bear witness to the order of the transcendent World, its universality of character in all its activities; and we judge accordingly of volition. We judge this the more necessarily, because the body of a voluntary Subject is a natural body, and its movements, which express volition, are according to law in the natural context. For it is thus that the activities of the Real manifest themselves; and though it is only subjectively that they are immediately known, yet it is only objectively, or in the course of Nature, that they can be clearly understood as actions or events in a context of causes and consequences, springing from and reacting on the agent as a phenomenon in relation with the rest of phenomena: since the region of motives is obscure and profoundly subconscious. This doctrine of volition, therefore, differs entirely from Kant's. He treats Freedom as Causation, thus making (contrary to his own principles) a transcendent application of that category: but here causation is confined to the region that can be studied scientifically; and no advantage is sought from the use of such a term in recommending the metaphysical hypothesis of Being. Kant regards all particular states of mind as phenomena, and thereby is left with no clue whatever to the character and activities of the intelligible World; and, accordingly, he falls into mysticism: but it has been shown above, that subjective processes are immediate Reality, so that we have immediate knowledge of it. Kant, finally, treats all that he calls phenomena as having a sensuous character, not merely distinguishable from, but opposed to, Reason; he uses the laws of Nature as merely a type of what Morality ought to be, flatly and fanatically denying that Morality can itself

be natural: but we know that there is no opposition between sensation and Reason, and that Morality, as the growing custom and conception of human life and the necessary condition of its welfare, is truly natural; so that nothing more insane or pernicious can be conceived than to set Morality in opposition to Nature.

But, be the source of volition what it may, if it belongs to an invariable order, and if actions occur according to natural laws, must not a belief in this oppress the sense of personal Freedom? Laws state the necessity or invariableness of the actions of agents and of the resultants of the co-operation of agents; the future of the World at any moment depends upon the combination of existing agents, and of these agents each man is one. His actions follow upon his character by necessity; for his character is expressed by his body; but because he acts according to his character he feels himself free. The necessity of his action in this sense, far from weighing upon him, is precisely what makes the action his own. It is true that if the course of the World were known to be predetermined by Fate, or Providence, he would feel oppressed and helpless. Or if it were merely known to him *as a process independent of himself*, he might despair; and sometimes, say in a shipwreck, when the predominance of the Not-self, though not absolute, is overwhelming, this really happens. But such happenings are rare: usually the course of the World, so far as it directly concerns a man, cannot be known apart from his own actions; because, in fact, he is one of the agents that determine that course, having the greater influence the more he exerts himself, the more a force, the more a man he is.

But, it may be said, our characters being what they are, we are not really free any more than other things in the world; for everything acts according to its nature. Certainly, no more than other things; for everthing is free, and, doubtless, so far as conscious, feels free and rejoices in its power. Does not a tiger feel free, slaying a deer; or a blackbird, chaunting to the dawn? The feeling of coercion only arises when our purposes are thwarted, never when they are fulfilled. The notion that matter acts under constraint, that the Earth (*e.g.*)

is constrained in her orbit by the Sun, is animistic. Where there is no purpose there is no compulsion. The agents in any material system co-operate, and in the resultant every one of them tells with its full weight (cf. Shadworth Hodgson's *Metaphysic of Experience*, iii. 6, § 5). That we have these feelings of freedom and constraint more clearly than other things, is due to our more explicit consciousness of all that happens, to our self-consciousness and purposefulness. To say that our characters at any moment are what they are, is to revive Zeno's sophism of the arrow; for it is characteristic of the development of organisation to produce forms more and more modifiable by experience; so that it is nearer truth to say, that a man's character at any moment is changing as it is changing, and that he can never twice be the same. Character is not a fixed but a growing thing, and (as Mill said) our desires to alter it (if we have any) are important conditions (say, rather, symptoms) of its growth and transformation. And even though a man's desires are the symptoms of his character, and though he may feel no strong desire for good, this ought not to discourage him; for he never knows the depths and resources of his own soul.

It is indeed most unreasonable to suppose that there are no limits to the development of a man's character; for it must depend partly upon the circumstances that call upon him to act, and finally upon the scope of his original congenital endowments. But for a man of understanding to desire an unconditional life is impossible. What, however, the conditions are, circumstantial or congenital, that limit his development, is always far from being fully known, and, therefore, the knowledge of it cannot be oppressive. In short, whether as to character or outward conduct we are, as Aristotle said, at least *συναίτιοι*, joint-causes, of our own actions; and moralists seem justifiable in their tenet that we have more power over our characters than over circumstances.

It may, perhaps, be further objected that our characters belong to consciousness, and therefore cannot be causes of physical events or have any power over the course of Nature. But to this my reply may easily be anticipated: character in

consciousness is our immediate knowledge of that Reality which is also manifested in our bodies. A man's body expresses his character as much as his mind, and even more than his apperception; for it is the phenomenon of his whole Being, including that which is only subconscious but which influences the apperceptive mind in innumerable ways, though rarely or never rising into apperception. Hence by his body a man is a cause in Nature to the full extent of his Reality, and accomplishes there what he wills; sometimes less, sometimes more, than he had thought possible.

§ 3. Volition, as a function of apperceptive consciousness, not mere instinctive or even ideo-motor action, implies purposes more or less remote, upon the prosecution or hindrance of which depend the feelings of freedom or restraint, success or failure, as they are characteristic of human life.

A purpose realised in action is a Final Cause; and this concept has been transferred to the operations of Nature, and plays a somewhat spectral part in Metaphysics. Aristotle uses *τὸ οὗ ἕνεκα* in connection with human affairs, such as house-building, in the sense of purpose; but in the theory of Nature as equivalent to *τὸ εἶδος*, the form or specific character which everything, aspiring toward God, strives to realise in itself according to its kind.

A Final Cause, as that which is the end of any human action, may be analysed, as by the Stoics, into (1) a representation of the end desired, which is an antecedent determining the action; (2) the effect of the action when it has been successful, and we say, 'This was what I aimed at.' Now in this process we have two steps of cause and effect: A, the representation (or its neural correlate), causing B, the action, which causes C, the result. Nothing here distinguishes final from antecedent Causation; unless it be supposed that by a *vis a fronte* A, the representation, is caused by C, the result. Such a notion sometimes haunts the dialectical mind; but of course A, the representation, is derived from former experiences, or reports, of things resembling it. That it was not caused by the future event C, appears whenever the action B is unsuccessful; for then A may be nothing like C, although our

unsuccessful actions are as purposeful as our successful ones. In fact, means and ends differ from causes and effects not as processes or events but merely in this, that ends imply desire, and means a choice on the part of the desiring Subject; an End is an event desired, and regarded as a possible effect of certain causes, which are in the power of an agent, and are therefore adopted as Means. Transferring these conceptions to the region of Nature, and assuming the welfare of Man to be the most desirable of all things, we may try to explain all the furniture of the world as means of promoting that end; in which vein the ingenuity of the Stoics and others is known to have laboured; though Montaigne would have pointed out that a cat understands the world quite differently.

The Aristotelian doctrine of Nature is less encumbered with difficulties of detail, and is more genial in its recognition that everything exists by its own right; but it lies open to this general objection, that there is no way of showing that the specific Form that seems to be realised in anything needs any other explanation than as the effect of physical antecedents. To say that anything sub-human strives to be what it becomes, is only to say that from time to time it becomes what it is. If we admit failures in realising a type, it is easier to reconcile our imaginations to them as due to the variable concurrence of physical agents, than by attributing them to the impotence of Nature. Moreover, to ascribe to Nature (or to Being manifested in her) such a consciousness as the terms 'aspiration,' 'endeavour,' 'purpose,' 'end,' imply, is only possible if you recognise a dualism in the World, such as Matter and Form, and along with it, upon one side, an inherent inferiority and imperfection. Want, insufficiency, inferiority, something unattained, can never characterise the Universe, if you say with Spinoza (*Ethics*, ii. Def. 6), *per realitatem et perfectionem idem intelligo.*

Kant, in the *Critique of Pure Reason*, requires all phenomena in Nature to be explained by causation; since Nature is so constituted by pure Understanding. But in the *Critique of Judgment* it appears that organic life cannot in fact be understood in this way by the human mind; so that an Antinomy

is established by confronting the Thesis of pure Understanding with the Antithesis: "the production of some material things cannot be explained by merely mechanical laws." And the solution of the Antinomy is that, whilst the Category of Causality requires a mechanical explanation of Nature, it does not exclude every other kind of Causality; there remains the possibility that, in the unknown inwardness of Nature, mechanical and final Causation are united as one principle in the same things (§ 70). Hence we are to pursue the mechanical explanation as far as we can; and for inorganic Nature it suffices. Even in organic forms much may be so explained, but never the specific fact of a natural End. For that we must find another principle; as the universal laws of Nature are determined by the Understanding, so particular laws of empirical fact, that cannot be subsumed by the universal laws, must also be explained as if an Understanding (not our own) had presented them to us (§ 4). Organisms display such an intrinsic adaptation of parts to one another and to the whole, whole and parts being reciprocally end and means, that, with our limited powers of reasoning, they are only to be explained by Final Causes, as the work of a purposeful, intelligent First Cause of the World (§ 71). In Kant's system, then, Causation and Teleology are not upon the same footing as principles of explanation; for Causation is a category of the Universal Understanding, not subjective, but constitutive of Nature; whereas Teleology is a subjective principle, derived from reflection upon certain groups of phenomena which we are unable to explain otherwise. Indeed, he himself concludes that, whilst the notion of Final Causes is indispensable to us men, and an useful clue to the study of Nature, seeing that phenomena are given to us in a fragmentary and accidental way, and have to be subsumed under universals by discursive reasoning; still by a higher Understanding, an *intellectus archetypus*, free from such limitations and intuitive, Nature throughout might be comprehended under one principle, and teleological explanation, with which even we men are not long content, might be needless (§ 77). Now such an *intellectus archetypus*, I should say, is implied in Kant's doctrine of the Categories of pure Under-

standing as constitutive of Nature. His own dissatisfaction with anything else than mechanical explanation was proved by his theory of the Heavens. And why else does he assume that the intuitive Understanding will comprehend Nature under Causation, rather than under Teleology?

Kant thought it absurd even to hope that a Newton should ever arise to explain organic life by physical causes; but Darwin has done much to explain the appearances of design in plants and animals without resorting to Final Causes. The theory of Natural Selection assumes that organisms vary in every species; that those unsuited to the conditions of life are destroyed; whilst those best suited survive, and transmit their constitution to descendants, so that from generation to generation there is an improvement in adaptation to the conditions of life. But as the theory thus stated gives no account of the origin either of the conditions that determine the form of species, or of the variations which the conditions select, it may be urged that at both these points there is room for the intervention of design. Herder (in his *Ideen z. Phil. d. Geschichte d. Menschheit*) suggested that the Earth had been prepared as the scene of human life. In a popular book on Astronomy, I have seen it taught that the remoter planets are supplied with many moons because they receive so little light from the sun. But with or without satellites, Saturnians, being what the prepared circumstances determined, would think it all for the best, and prefer a dim light, as more favourable to love and meditation. For every living thing necessarily approves of the conditions in which it flourishes; and, exerting the reflective understanding, naturally regards them as providential. However, we can give some account of our Earth to the close of the Tertiary Period without appealing to Final Causes.

As for the direction of variations, so many germs perish for one that survives, so many rapacious and treacherous types prevail, that to us men (as Kant might say) the process seems wasteful and merciless. To the charge of wastefulness it may be replied, indeed, that to the Universe economy can be no concern; Kronos engulfs his children, and yet *nihil in nihilum*

revertit. And if it be urged that even in the conservation of matter, there is a degradation of energy, rejoinder may be made that, if the Universe be finite, the power of work may under certain conditions be restored; whilst, if the Universe be infinite, its powers must be inexhaustible. The last point, however, cannot be pressed in the defence of Final Causes, if Final Causes imply a system of the World; for an 'infinite system' is a contradiction in terms. Moreover, the riches of the World cannot really be any ground of justification against the charge of wastefulness in the method of Natural Selection; the gravamen of which lies here, that such a wasteful process is an unintelligent one. It is as if the potter should make pots by the gross, and appoint 90 per cent to destruction. If any plan be hidden in such work, how can it help the intelligence of us men?

The merciless character of organic evolution appears to us, first, in reckless propagation, and the consequent destruction. Every species is as prolific as it can be compatibly with the development of its individuals; and the deaths that ensue from inanition, disease and violence, present a stupefying scene. The best one can say for it is that, as life rises in the organic scale, the death-rate declines. Yet even man still suffers outrageously by violence, disease, inanition: the notion that "Malthus's Law" no longer holds of civilised man is a foolish delusion. But more sinister than the direct destruction of life is the spectacle of innumerable species profiting by a life, parasitic or predatory, at the expense of others. The parasites refute the vulgar prejudice that evolution is, by the measure of man, progressive; adaptation is indifferent to better or worse, except as to each species, that its offspring shall survive though by atrophy and degradation. The predatory species flourish as if in derision of moral maxims: we see that, though human morality is natural to man, it is far from expressing the whole of Nature. Animals, at first indistinguishable from vegetables, devour them and enjoy a far richer life. Animals that eat other animals are nearly always superior not only in strength and grace and agility but in intelligence. There are exceptions to this rule; some snakes

eat monkeys (thanking Providence), and the elephant is content with foliage; but compare cats and wolves with the ungulates that make a first concoction of herbs for their sake. It is true that our monkey kin are chiefly frugivorous; but this leads to the worst case of all; for it may be plausibly argued that man was first differentiated by becoming definitely carnivorous, a sociable hunter, as it were a wolf-ape. Hence the advantage of longer legs, the use of weapons, the upright gait and defter hands to use and make weapons, more strategic brains, tribal organisation; and hence liberation from the tropical forest and citizenship of the world. The greater part of his subsequent history is equally unedifying: having made the world his prey, he says that God made the world to that end; and those who have preyed upon their fellows, and enslaved them, and flourished upon it, have declared that to have been the intention of Nature. Whose are the kingdoms of this world? Slowly, through humiliation and martyrdom, a better life has emerged.

It would be excusable if, like Kant, one were not very anxious to carry out the explanation of such a world by Final Causes: it seems to labour under a curse and sigh for atonement. But the hope persists that the sinister indications of Nature may be evaded, and to that end such considerations as follow are laid before us. In various forms, by Plato, Leibniz, Mill, it is suggested that the evil aspect of Nature should be explained by a certain limitation of power on the part of the Artificer in relation to certain necessary conditions of existence; and this suggestion might be acceptable if the evil were always a sort of weakness, failure and incapacity; it may excuse the parasites, if we forget their victims. But how can the limitation of power account for the shark, the tiger, and Jenghis Khan; or for the display of ingenuity and technique being as great in the cobra's fang as in the cow's udder? It is sometimes said, again, that we do not, indeed, understand the whole purpose of Nature, but that we cannot reasonably expect it; or even (at hazard) that the Universe may not recognise our code of morals. But such arguments will never do: the doctrine of Final Causes is an attempt to explain Nature by

what is most familiar in ourselves; and it is a strange inversion to defend the doctrine on the ground that it passes all understanding.

The course of our discussion tends, in my judgment, to impair one's confidence in the reality of Design in Nature, and even in the desirability of tracing it there; but by no means excludes its possibility; and to show its possibility seems (I fear) to some friends of Final Causes all that is required of them. But that is a great mistake; if no more can be done, the belief must grow every day more attenuated and ghostly. If Teleology is still to command adherents there must be built up a definite system of the Design in Nature, comparable in extent, detail and coherence with the system of physical Causation that daily gains in power and prestige; and the explanation by Final Causes must have the continuity of thought, the conceivableness, if possible the imaginableness, of scientific explanation. For example, if it is suggested that the conditions of any species' life may have been prepared, or that useful variations may have been predetermined, was the work done by physical antecedents or by miraculous intervention? One's choice between these alternative methods should be plainly stated; and whichever of them be adopted, the "particular go of it" should be made quite clear. For my part, I decide in favour of physical antecedents, and regard Kant's suggestion that in the inwardness of Nature physical and final Causation may be the same principle, as the only possible way of reconciliation.

In a Divine Consciousness, to which all existence is equally present, there can be no causation physical or final, no process, no distinction of End and Means, since whatever is possible is eternally known there and realised. Yet it is from the conception of such a state of Being, which no power of speculation has ever been able to connect with the temporal world of birth and decay, that the notion of a *vis a fronte* seems to have been derived, a turning back of the effect upon its cause, and a determination of Means by Ends; for it has been supposed that whatever End may be represented, it already exists in the eternal world and energises there; but as it exists as much as,

and no more than, the Means, its efficacy is unintelligible. The difficulties which such a conception imposes upon the problems of Evil and Freedom are sufficiently well known; and so is the difficulty of understanding how the very notion of an End as something desired, or represented as a better, can be reconciled with it.

According to the views taken in this volume, Eternity is not a State of Being, but Law; and Reality is essentially a process in time, as witnessed by the nature of consciousness; and there is no incongruity in regarding such a process as expressed amongst phenomena in space by Causation. But Means and End, as distinguished from Cause and Effect, are irreconcilable with the conceptions of transcendent Being that have been established by the great Religions, excluding from that region of thought such differences of value as are implied in Means and End. It is true that in its popularisation Religion is never consistent; on the other hand, consistency leads to such obscurity of thought (be it even by excess of light), that all meaning seems to disappear: and between vacuity and contradiction the choice is hard. Spinoza's identifying of existence with perfection is a stroke of rhetoric: to complain of a man for indulging his turn for style once in a hundred pages would be too exacting; but 'perfection' is a term of praise; and praise or blame of the Universe is equally impertinent. And the same may be said of any estimate we may form of a Divine Purpose from phenomena that interest us.

Besides, every use of teleological categories depends upon a partial abstraction; for the means to any end are only known to us by experience, and we can hardly suppose that the Universe learns in that way; that through a series of Great Years it serves an apprenticeship, and, correcting the blunders of its immaturity, staggers forward to some remote accomplishment. If such an hypothesis threw some light upon what we may think the failures of our present World, it would also prevent our inferring anything as to the true purpose of it all. These suggestions are only fit to be put into the mouth of one's opponent in a Dialogue.

A system of Teleology, in which ends determined means, and these other means, and so forth, would have the same character of uniformity, as a physical system in which causes determined effects and these in turn became causes: the alphabet is the same whether we read it from Z to A or from A to Z: Spinoza's determinism and Calvin's predeterminism alike exclude every sort of accident, caprice and spontaneous deviation or intervention. Apparently, therefore, we may interpret the course of the World in either way. What hinders us in doing so is, that physical causes are in any case intelligible; but final causes are not, unless they present some analogy to human purposes. Now, in Nature many things have no human purpose; many others suggest purposes quite inhuman; hence we hesitate about the remainder.

Again, an end, in the full sense, is contradictory of an infinite process; but so it is in human life, where every end or effect is only a transition to new means, or causes; and death, the terminus, is not regarded as the purpose of our existence. Thus, even in an infinite process, the End of Being might be manifested through the World, as known or divined by us, in certain culminating epochs in the history of things; and so we might read the course of Nature, if it were possible to accommodate our reason, or our feelings, to such a conception of Being that the contemplation of an End could be ascribed to it. Then the spectacle of evolution would suggest that the end of existence is the development of consciousness: first the life of feeling and sense, that grows into all the riches of subjective emotion and objective quality and form; then the life of self-consciousness, culminating in science and philosophy, the self-knowledge of the World.

Frankly, I wish it were possible to prove or make credible the teleology of Nature, because we might then follow Aristotle in identifying the End of Nature with the End of Humanity; but I cannot help feeling that the weight of argument is against the doctrine of Final Causation. Like transcendent Being, it remains a merely indicative, orectic Category. The adaptation of organisms is a fact; and so far as we can follow the history of the World from age to age, its gradual rise to

self-consciousness is a fact; but the teleological interpretation of all this baffles our understanding. We see the usual conflict between recent conceptions of Causation and the ancient Animism, with the usual result. Because our forefathers stood nearer to the gods than we do, they had greater confidence in interpreting their purposes.

§ 4. Man, at any rate, is subject to want and desire, and lives by the representation and partial realisation of ends; and, however it may be with the Universe, for the philosopher, its 'secretary,' life is chiefly an effort after the fulness of understanding, as Aristotle declared, Spinoza assenting. To discover the end or chief Good of human life is the central problem of Ethics. It cannot, therefore, be a vain inquiry whether there are ends in Nature, and whether they are to be realised especially in Man; for, if there be, to discover them must necessarily be to discover his end also. As the power of external causes is, as Spinoza says, greater than that of Man, the pursuit of ends that Nature does not sanction must lead to disaster: for every nation this is an instant truth. It is clear that pleasure is not the end, but a means of guidance; nor riches, but a means of leisure; nor virtue, but a means of co-ordination and an incentive of enterprise. May we not say the same of knowledge, and, like Bacon, view it as a means to the reign of Man? That cognition, as well as pleasure and virtue, is a guide to action, cannot be denied; and the structure of the nervous system, in which every stimulus has its reaction, strongly points to the intermediate place of knowledge in the process of life. But it has already been shown that the end of Nature, or of human life, cannot be a terminus, but only a transition. Therefore, it does not follow that action, because it is a result of cognition, is also its end or Good; and it seems impossible it should be so, seeing that action is a fact of the body or phenomenon, whereas knowledge belongs to Reality. Our knowledge far exceeds our power of utilising it; and the proportion of theoretical to applied science is not likely to decrease in the future; because the synthesis of principles necessary to the employment of knowledge is far more difficult than the analysis of events that leads to new

discoveries. That many who engage earnestly in investigation look for their reward to the utility of their results,—by no means to themselves, perhaps, yet to mankind,—is compatible enough with the supremacy of speculation, if we consider how common illusion is in the desires and efforts of men, and how widely the result often differs from the intention. Thus the love of fame and of riches provides leadership and capital, not merely personal but social goods; and the desire of a scientific investigator to be useful may have other consequences than the cheapening of cotton-yarn and pig-iron. Besides, the use of applied science is always to increase the efficiency of labour; and what is the use of that, unless it be to shorten the hours of labour, and to give the workmen more leisure for culture and reflection?

But if self-knowledge be the end of Nature, or mental culture the chief Good of every normal man, these ends are plainly not so predominant as to exclude all others. To philosophise is not every man's ruling passion. The attempt to set up the same ideal for all men is one of the greatest errors of philosophy. Social life is not to be understood except as constituted by various species of men,—not merely ethnological but moral species. The differentiation of the human stock into such species is due (apart from ethnological causes) in a superficial way to the division of labour, but more profoundly to congenital differences of capacity and disposition. This was recognised by Plato and Aristotle, but obscured by Stoicism and other forces; so that it may now seem pagan and invidious, whereas it is merely humanity and common sense. The different species of men have different systems of desire and activity; and the *bonum consummatum* is the harmonious fulfilment of all our ends.

To impose one ideal upon all men is an intolerable torture, that never has been, and ought not to be, submitted to. The notion that such a thing is possible seems due chiefly to a confusion of Virtue with Innocence. There is a certain list of abstinences, such as we are familiar with in the Decalogue, to which every one is necessarily subject, because their neglect is manifestly injurious to others, and, therefore, tends to the

dissolution of Society. The observance of these abstinences is Innocence. Because no more can be enforced by positive law or opinion; because so much, though attained by few, is abstractly possible to all, and because false notions of equality require that here, at least, the differences of men shall be obliterated, this negative standard is exalted into an universal Ideal. Then, because even this standard is beyond the attainment of most people, whilst the social grounds of it are also misunderstood, morbid men turn to asceticism; because it is easily imitated in behaviour, cunning men turn to hypocrisy; because it is mistaken for the limit of human excellence, the compatibility of great virtue with imperfect observance is often denied.

But the belief in one universal Ideal has another root in the truth that the chief Good, Philosophy or Culture, may be participated in some degree by all; or, rather, that no society is other than barbarous in which any normal man is precluded from participation. Philosophy or Culture (as I say, to avoid a limitation of the notion to merely technical discipline) is, in the first place, the greatest Good in itself; in the second place, it is the object of a strong and tutelary passion (by Spinoza too much weighted), though in most men ill-nourished; but, in the third place, it enlightens and guides the other passions, which, for good or evil, are the forces of life. Without such enlightenment even the noblest passions, such as patriotism and justice, although they contain in themselves a sort of instinctive rationality and guidance, may yet issue in actions the most injurious and unjust.

Still, under oppressive industrialism and our present division of labour, little culture is possible for the majority even of civilised men; and we present, in fact, so many types of character and ability, that to preach the chief Good as the universal Ideal would be a preaching to the winds. This variety of types is well adapted to the division of labour; and the greatest happiness of each man (so far as it depends on circumstances) is to obtain employment according to his own nature. Then activity in his vocation (as it may then be truly called) becomes the first trait of his ideal; caring for

honour more than for wealth, and more for achievement than for honour; to which must be added public spirit in relation to the reforms that may ameliorate and civilise our life, and affability in domestic and friendly intercourse, where the instinctive rationality of the passions is most naturally fostered.

It is possible that the future amelioration of human life, of which the last generation was more confident than we are, may at last establish an universal Ideal; and, if so, a little reflection will show any one that it can be no other than Culture. But hitherto even individuals, who have formed ideals and lived near them, have been very scarce; and a subjective ideal, constructed for oneself, is likely to be partial and misleading, since it is only in long years of experience that we can learn what manner of men we are. Probably the safest course for nearly every one is (as Plato tells us) to rely chiefly upon activity in one's own vocation. A truly rational life, in which all actions were co-ordinated to one end, would be for most of us worse than prison or a strait-waistcoat. Our lives are like Nature, in which a purpose seems sometimes clear, and many mechanical adaptations are traceable; whilst for many other things no reason can be given and none is asked.

§ 5. Science, Philosophy, Culture depend upon social life; for Society is the co-operation of minds manifest in bodies whereby they have power over Nature; and this power is necessary to free us from primary wants, to give leisure for reflection, and to provide the means of investigation. In society men appear as co-operative, yet in mutual opposition, and order appears as an equilibrium of conflicting forces. Hence the individual may suppose that his own realisation in happiness, or virtue, or knowledge, is the end, at least for him. But this delusion is dissipated by clearer insight. For the subordination of the individual and the unity of the World are indicated not only by industrial and social division of functions, by the absolute dependence of every man upon his fellow, and by sympathy and imitation; but still more by the biological evidence, that each of us is to organic Nature only as a bud upon an ever-living tree. For in time all life is

continuous, and this is the form of Reality; whereas the separation and opposition of men is a phenomenon of bodies in space. It is true that social life provides the conditions of greater individual development; only in society is it possible to secure method, and continuity in labour, and some approach to the rationalising of one's own life under one end, and therefore integrity of character and systematisation of thought. And how otherwise than through individuals can speculation flourish? But social services are reciprocal and interdependent; the development of character embraces public interests, and the expansion of speculative thought has that universal significance which I have indicated.

The growth of societies, the taming of mankind, the overcoming of tribal isolation, the establishment of industry,—a long and miserable story, is now being deciphered. The primitive customary life of wandering tribes was gradually superseded by the organisation of governments, which obtained a formal unity for the people, partly by fear, partly by utility, partly by loyalty; largely by imaginative fictions (not uninformed with truth), such as the embodiment of the people in the king, and (more powerful) his affiliation to the gods. Polity could never have succeeded without Religion and the immortal gods, who united generation to generation, who protected the laws even against kings, whose legends served for history and philosophy, whose kinship drew mankind from their brutal neighbours, who knew what was done in secret and read the heart. In no other way could Morality have been distinguished from Observance than by conscience of that which the gods and no others knew. Thus the current of life was traced to that secret fountain which is the witness of the reality of Nature and of Man.

We must not forget or disguise the hideousness of most of this story: worse, had it not been transfigured by poetry and song and the plastic Arts, that have helped to humanise the gods and to deify mankind. But greater has been the power, indefinable and indescribable, of social and moral development, that has slowly moralised government and religion and liberated private life. Though industry and the growth of reflection

have served us well, there is more in human history than our own efforts and designs. Pestilence and famine have not been useless allies; and who shall say whether we owe more to institutions, or to the destruction of those nations whose institutions were or became perverse? For in government and religion there is a natural tendency to parasitism; in their growth they often strangle the people they had formerly sustained. Only those constitutions can be always good that train the individual to live by the law and inspiration of his own heart. The essential changes in our life are the gradual realisation in politics and religion of freedom to act and think; the growth of moral courage, and of the co-operative spirit that makes authority needless; and the increase of that scientific enlightenment which, by giving control of physical forces, makes possible the diffusion of leisure and culture, and even if these be rejected by us, unworthy and bent upon getting anything rather than understanding, still has its own value and its own career, self-determined, disinterested, and inevitable.

THE END

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